Philips Consumer Electronics Company
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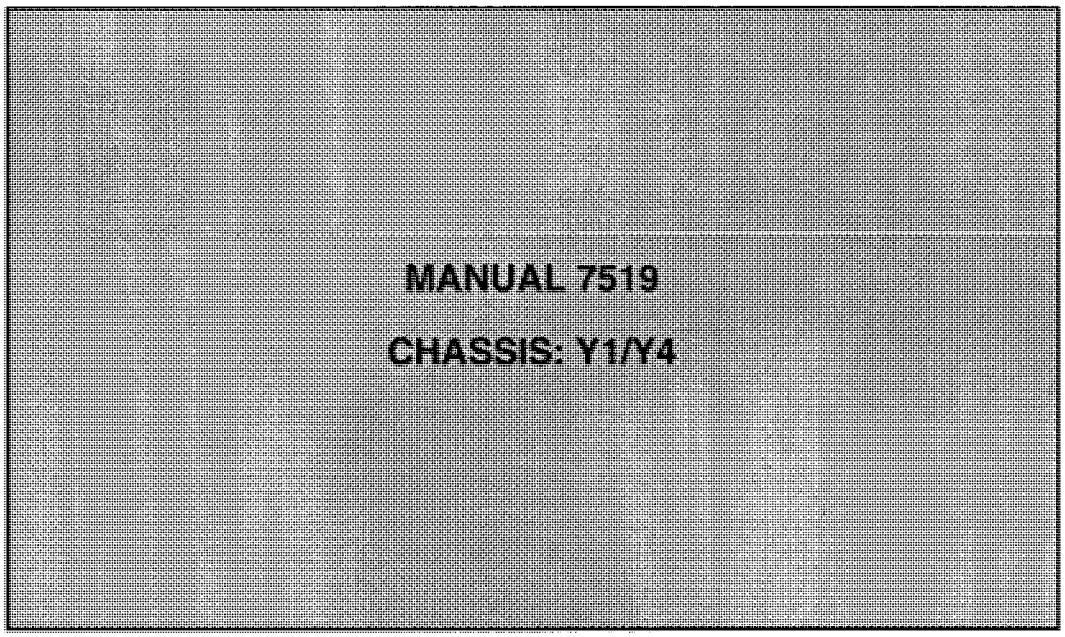
574

Technical Service Data

Service Company
Technical Publications Dept.
P.O. Box 555
401 East Old Andrew Johnson Hwy.
Jefferson City, TN 37760

MANUAL 7519
Chassis: Y1/Y4
File: 1993: 7519

MANUAL 7519 (Chassis: Y1/Y4)



MANUAL 7519 (Chassis: Y1/Y4)

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SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

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IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company** Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

** Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

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* Broken Line — · — · — · —

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FAX 615-475-0221

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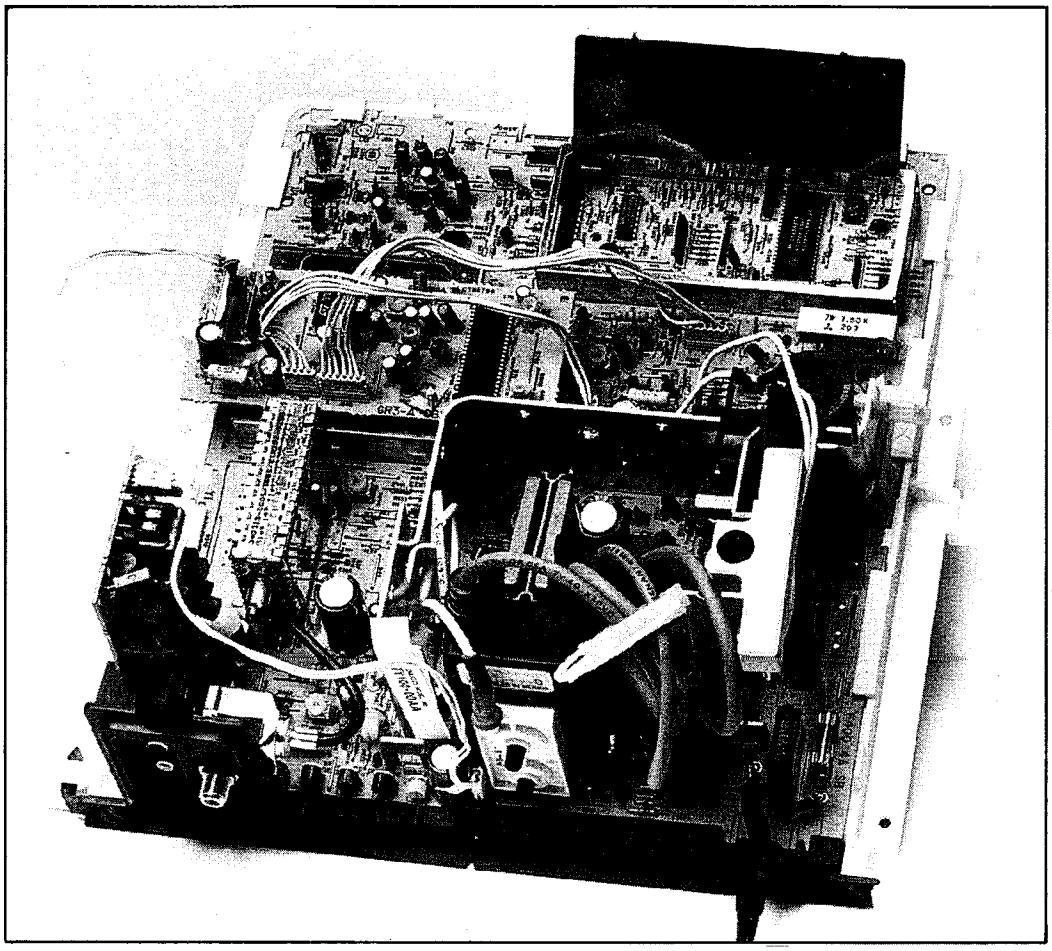


Figure 1 – 25Y1 Chassis Rear View

Y1/Y4 COLOR TV CHASSIS

INTRODUCTION

The Y1/Y4 Series Chassis is the leader TV Set produced by Philips Consumer Electronics Company for the 1993/1994 model year. The Y1/Y4 Chassis is used in TV Sets with 13, 19, 20, 25, and 27 inch CRTs. The chassis orientation is from front to rear in the Y1/Y4 design (sometimes called "North-South"). The purpose for this layout design is to facilitate the smaller and narrower picture tubes, to allow the Customer Keyboard to be located on the Main Chassis printed circuit board along the front, and keep the design of the TV Cabinets narrow. The Y1/Y4 Chassis features the Y1/Y4 Tuning System (178 channels, depending upon the model) with On-Screen Display. The Y1/Y4 Tuning System has two ICs mounted on the Main Chassis, which include a Microcomputer IC and a Memory IC. The Microcomputer communicates with the Memory IC, the Customer Keyboard, the Remote Receiver, the U/V Tuner, the TV Signal Processor, an AVIO Jack Panel, and the Power On/Off circuitry. The Memory IC retains the settings for Favorite Stations, Customer Control Settings, Mode Switches, and Factory Setup Data. The Y1/Y4 Tuning System can control the stereo feature and/or PIP functions in the Y1/Y4 Chassis if these options are present.

This chassis features a Very Large Scale Integration (VLSI) IC. The VLSI chip performs Video IF, Sound IF, AFT/AGC control, Horizontal Signal processing, Vertical Signal processing, Horizontal/Vertical synchronization, and Chrominance/Luminance processing. The On-Screen Graphics information is placed on the main signal within the TV Signal Processor.

The Y1/Y4 Chassis features a basic Series Pass regulation system for the main voltage source. Only one "HOT" ground reference is used in the Y1/Y4 Chassis. This "HOT" ground is the return side of the Bridge Rectifier. AN ISOLATION TRANSFORMER IS REQUIRED WHEN PERFORMING SERVICE ON ANY VERSION OF THE NEW CHASSIS.

SIGNAL FLOW

The incoming TV RF signal is applied to the U/V Tuner via the RF Input (Figure 2). The IF signal is developed within the Tuner, then amplified by an IF Preamplifier located inside the Tuner. The amplified IF signal is sent from Pin 17 of the U/V Tuner to the SAW Filter, Y200. The SAW Filter produces bandpass shaping for the 45.75MHz IF signal before it is applied to the TV Signal Processor Integrated Circuit, IC270, for processing. AGC (to the Tuner) and AFT (to the Microcomputer) signals are developed within IC270 and then sent to the Tuner for RF Amp gain control and Oscillator frequency correction.

Sound IF signal processing for the Y1/Y4 Chassis is performed by coupling the 4.5MHz Sound IF signal from IC270, Pin 52, via a 4.5MHz Band Pass Filter, Y220, into IC270, Pin 49. Audio is output from Pin 4 in the mono versions and applied to an Audio Output Integrated Circuit, IC230, to drive a 16 ohm speaker. For the stereo equipped sets, the detected baseband audio signal exits IC270 and then enters the Stereo Module. The Stereo Module has Internal/External switching to allow either the detected baseband audio or audio from another source via the AVIO Jack Panel to be routed through and exit to the speakers.

Composite video from IC270, Pin 52, is passed through a 4.5MHz Filter, L209, to remove any sound products present. This signal either goes back to IC270, Pin 37, 39, 40, and 44, or is sent to the AVIO Jack Panel for switching. The placement of Jumper B200 decides the direction of signal flow. The chroma signal is applied to Pin 37 via a chroma peaking circuit. Luminance is passed through 3.58MHz Trap circuitry before being applied to Pin 40. Luminance peaking is applied to Pin 39 of IC270. Sync input is applied to Pin 44.

The Red, Green, and Blue signals are developed within IC270 and output via Pins 23, 24, and 25. Brightness, Picture, Sharpness, Color, and Tint control voltages are applied to IC270 from the Tuning System Microcomputer, IC345. The Red, Green, and Blue signals from the TV Signal Processor are amplified on the Main Chassis by RGB Amps before being applied to the CRT Board. On the CRT Board, these signals are amplified again by their respective Drive transistors before being applied to the CRT.

On-Screen Graphics is added to the video going to the CRT in the Chroma/Luma Process block in IC270. There are two types of graphics, normal set operation and Closed Caption. Red, Green, and Blue graphics leave IC345 and goes through B361, B362, and B363 to IC270. If closed caption is installed, the graphics goes through IC360, the graphics gate. Closed Caption graphics is generated in IC355 and sent to IC360 via the Red, Green, and Blue lines. IC355 uses the video out of L209 as its input on Pin 11. All other control information comes from IC345.

The Drive and Cutoff controls for CRT Set-Up are located in the Red, Green, and Blue Drive circuits on the Main Chassis. These controls are conveniently located across the rear of the chassis. This location enhances the adjustment process for CRT Set-Up. Always use the procedures given in the Service Manual for setting up the CRT Circuits (White Balance). The Drive Controls are adjusted for proper mixing of the Luminance and Chrominance signals. The Cutoff Controls in the output circuits of the Driver Transistors provide the adjustment of the bias level for the CRT Output Transistors and thereby the CRT cutoff values.

Horizontal and Vertical signals are also developed within IC270. Adjustment for Horizontal Centering is connected to IC270, Pin 13. There is no adjustment for the Horizontal Oscillator. The horizontal circuit is a count down type of system.

The horizontal signal is applied to a Horizontal Driver transistor, Q501, where the signal is amplified and transformer coupled to the Horizontal Output transistor, Q502. The output from Q502 drives the Integrated Flyback Transformer, T501. The IFT develops the High Voltage, Screen Voltage, Focus Voltage, and Filament Voltage for the Picture Tube. An Overvoltage Shutdown voltage is developed from the IFT and applied to a sensing circuit to enable shutting down the chassis if the High Voltage becomes too high. Scan derived voltages provided by the IFT for use by the chassis are the 200V Source, 24V Source, 14.5V Source, and the 14.5V Source.

The Vertical signal exits IC270 at Pin 18 and is applied to the Vertical Output Integrated Circuit, IC550. The vertical signal is output from IC550 and applied to the Vertical Yoke. Circuitry for Vertical Centering and Vertical Size are located in the feedback path for the vertical signal. Vertical feedback is returned to IC270 to correct or modify the Vertical Drive signal before it exits from the integrated circuit.

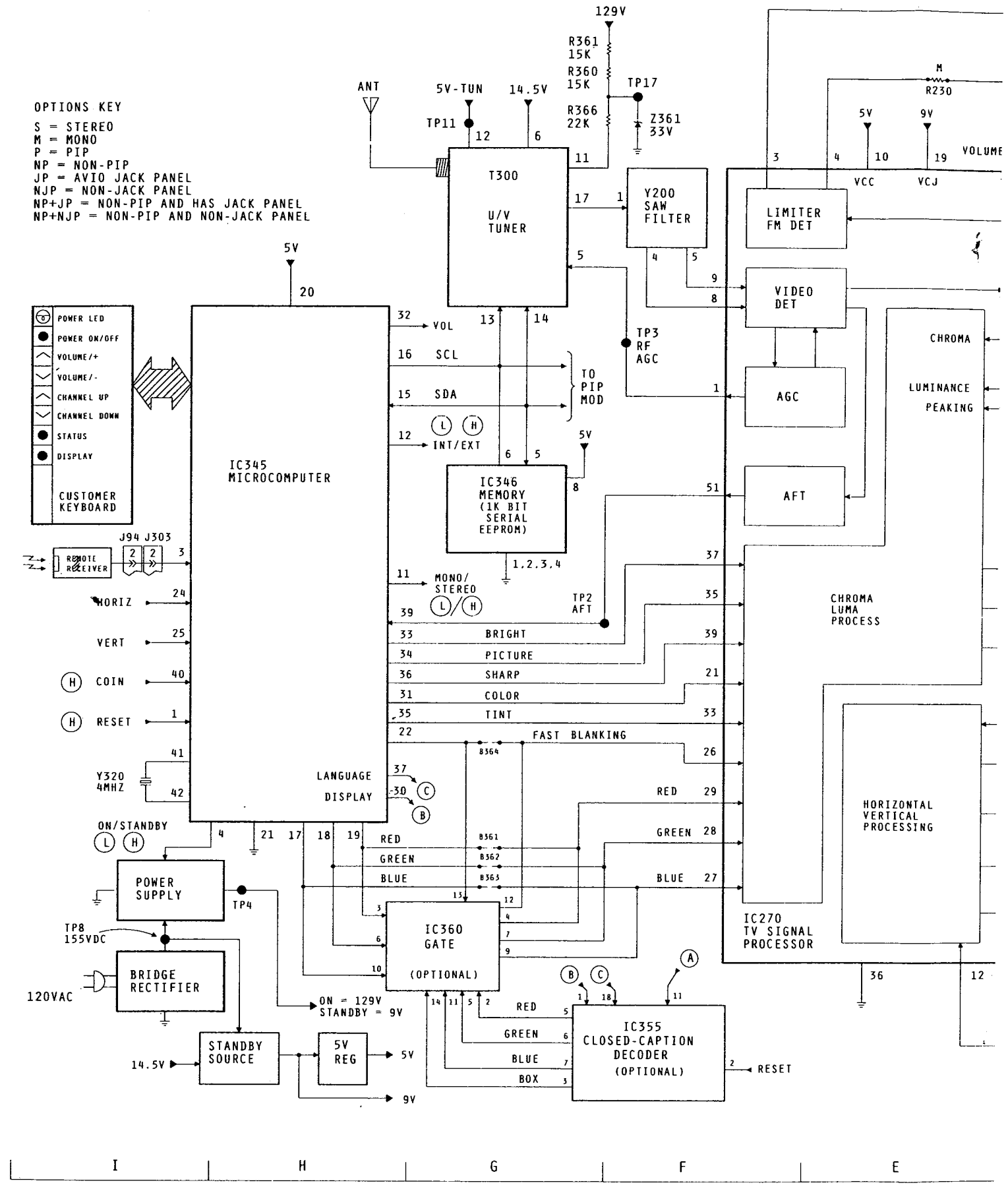


Figure 2 – Y1/Y4 Chassis Block

OPTIONS KEY
S = STEREO
M = MONO
P = PIP
NP = NON-PIP
JP = AVIO JACK PANEL
NJP = NON-JACK PANEL
NP+JP = NON-PIP AND HAS JACK PANEL
NP+NJP = NON-PIP AND NON-JACK PANEL

ANT
5V-TUN
14.5V
129V
R361 15K
R360 15K
R366 22K
TP17
Z361 33V
TP11
T300 U/V TUNER
Y200 SAW FILTER
TP3 RF AGC
5V
9V
VOLUME
VCC
VCJ
M R230
IC230 MONO AUDIO OUTPUT
MONO/STEREO
INT/EXT
STEREO MODULE (OPTIONAL)
L
R
INT/EXT
LIMITER FM DET
M R349
Y220 4.5MHZ BPF
HORIZ
VERT
SCL
SDA
B/W PIP MODULE (OPTIONAL)
EXT AUD IN
EXT VID IN
LEFT
RIGHT
AVIO JACK PANEL (OPTIONAL)
VIDEO DET
L209 4.5MHZ FILTER & Q210
CHROMA
CHROMA PEAKING
NP+NJP B200
LUMINANCE
PEAKING
AGC
NP+JP B205
AFT
RED
GREEN
BLUE
CRT BOARD
200V
G2
FOCUS
R5 1.5K
R4 1.5K
FIL
HV
CHROMA LUMA PROCESS
RED
GREEN
BLUE
RGB AMPS
CRT
POWER LED
POWER ON/OFF
VOLUME/+
VOLUME/-
CHANNEL UP
CHANNEL DOWN
STATUS
DISPLAY
CUSTOMER KEYBOARD
IC345 MICROCOMPUTER
VOL
SCL
SDA
TO PIP MOD
INT/EXT
IC346 MEMORY (1K BIT SERIAL EEPROM)
1.2.3.4
J94 J303
REMOTE RECEIVER
HORIZ
VERT
COIN
RESET
MONO/ STEREO
TP2 AFT
BRIGHT
PICTURE
SHARP
COLOR
TINT
FAST BLANKING
B364
Y320 4MHZ
LANGUAGE
DISPLAY
ON/STANDBY
RED
GREEN
BLUE
B361
B362
B363
HORIZONTAL VERTICAL PROCESSING
IC270 TV SIGNAL PROCESSOR
COIN
24V
IC550 VERTICAL OUTPUT
YOKE
R_T
TO MICROCOMPUTER
R520 HORIZ CTR
1.2.3
POWER SUPPLY
TP4
TP8 155VDC
BRIDGE RECTIFIER
120VAC
IC360 GATE (OPTIONAL)
ON = 129V STANDBY = 9V
Q501 HORIZ DR
T504 XFMR
Q502 HORIZ OUT
129V
T501 IFT
HV
G2
FOCUS
TP7
200V
FIL
FIL
TP6
14.5V
14AV
TP5
24V
STANDBY SOURCE
5V REG
14.5V
5V
9V
IC355 CLOSED-CAPTION DECODER (OPTIONAL)
RESET
AFC
Q530/IC530 SHUTDOWN CONTROL
TP9
SHUTDOWN

Figure 2 – Y1/Y4 Chassis Block Diagram

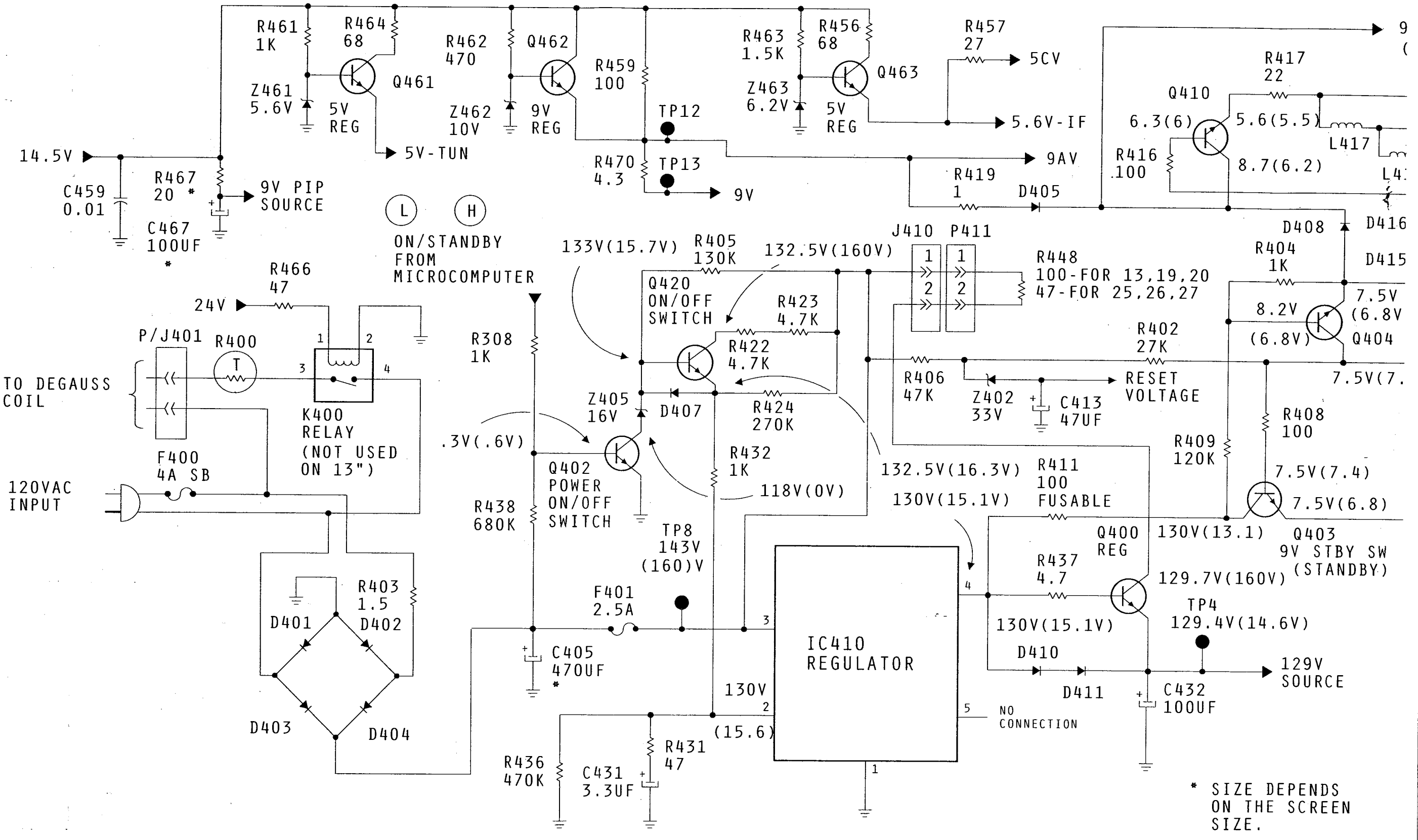


Figure 3 - Y1/Y4 Chassis Power Supply Block Diagram

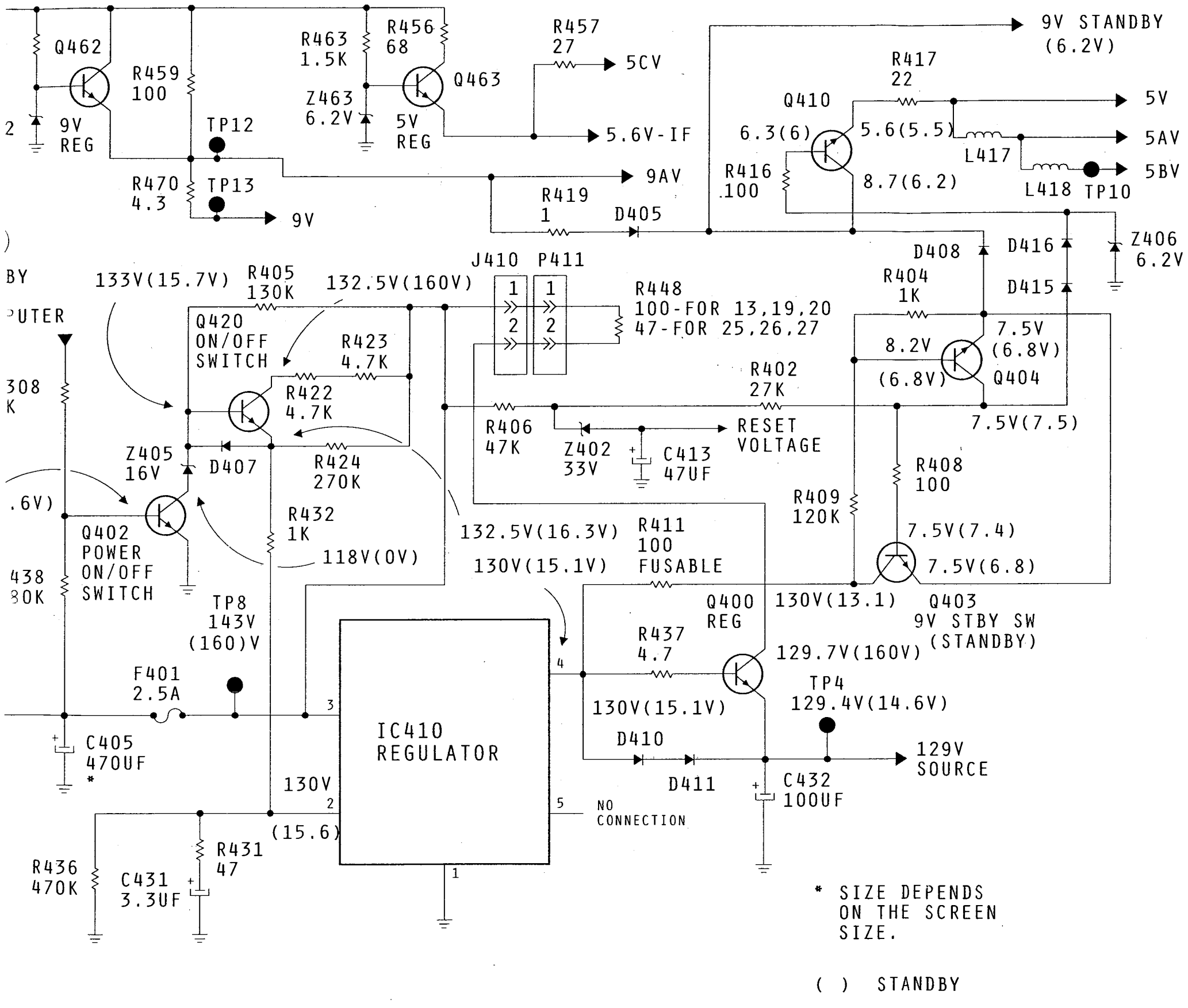


Figure 3 - Y1/Y4 Chassis Power Supply Block Diagram

Y1/Y4 CHASSIS POWER SUPPLY

When the 120Vac Source is connected to the Y1/Y4 Chassis (Figure 3), approximately 160Vdc is developed by the Bridge Rectifier circuit. The switched ac voltage from K400 is applied to the Degauss Coil to degauss the CRT at turn On. As degauss current flows through R400, its resistance increases stopping the degauss cycle. Resistor R403 dampens the inrush of ac current to prevent damage to the Bridge rectifiers. Capacitor C405 stores and filters this rectified dc voltage. The Bridge Rectifiers are protected from a failure of the Regulator IC by a 2.5A, Fast Blow Fuse (F401).

The 160V Source can be checked at TP8. The 160 volts drops to approximately 143 volts when the TV is turned On. This voltage is applied to the base circuit of the 9V Standby Regulator, Q403. The 160V Source is applied through the collector source resisters to Q400 and the Power On/Off Switch transistors, Q402 and Q420. Q402 turns On and Q420 turns Off as soon as the 160V Source starts up. With Q402 turned On, Pin 2 of IC410 is pulled down to approximately 16Vdc. The input, Pin 3, of IC410 is from the 160Vdc Source. Current passes into Pin 3 and out Pin 4 to provide the source voltage for the Standby Supply. The voltage at Pin 4 during standby operation is approximately 15 Volts because of the 16.3 Volts on Pin 2. The voltage from Pin 4 is applied to the 9V Standby Regulator, Q403. The output from Q403 provides the 9V Standby Source, 5V Source, 5AV Source, and 5BV Source. Before the 9 volts becomes available, the Reset line to the Microcomputer is held Low by C413 and associated circuitry. Then, when the 9 Volts and the 5 Volts becomes available, the Reset line is allowed to go High to the Microcomputer.

When the TV is Off, the Microcomputer applies a High through R308 which keeps Q402 turned On. There is no actual Off state for the Power Supply; the set is either On or in the Standby Mode. Z405 will place 15.7 volts on the base of Q420. D407 will place 16.3 volts on the emitter of Q420, which turns the transistor Off. The bias current for Z405 and IC410, Pin 2, is through R405 and R424. Pin 2 of IC410 in standby is 15.6 volts. This causes the output of the regulator, Pin 4, to be 15.1 volts.

When the set is turned On, the Microcomputer sends a Low to the base of Q402. Q402 is turned Off and Q420 is saturated, allowing Pin 2 of IC410 to go to approximately 130 volts through R423 and R422. The output voltage from Pin 4 is always below Pin 2. When the TV is On and ac line voltage is Mid-range or Low, Q400 is saturated. When the TV is On and the ac line voltage is High or the Load Current is Low, Q400 operates in a linear mode.

During Power Off, the voltage from Q403 is the source for the 5V Regulator, Q410 and the 6.2V on the 9V Standby line. Q404 is held Off by the 13.1 volts across R409. The base voltage of Q403 is regulated by Z406, D416, and D415 to 7.4 volts. Q403 conducts placing 6.8 volts on the emitter. This voltage goes through D408 to Q410 and the 9V Standby line. When the chassis is powered On, Q404 is turned On by the 130 volts from Pin 4 of IC410. The emitter of Q404 goes to 7.5 volts which will turn Off Q403. The 9 volts from Q462 will be the source for the 5V Regulator, Q410.

TROUBLESHOOTING THE Y1/Y4 POWER SUPPLY

CAUTION: This Chassis requires the use of an Isolation Transformer while troubleshooting.

The supply in the Y1/Y4 is of the Series Pass (Linear Regulator) design. The Series Pass uses a Transistor or Integrated Circuit as the regulator. These are straight forward in their operation. A voltage source is applied to the input and the expected voltage is present at the output. Most troubleshooting in Series Pass power supplies can be performed very easily with a voltmeter. The only difference about this Series Pass supply is the switching between standby and full power. Figure 3 shows all the special component voltages for the entire power supply. Use these when troubleshooting.

The Bridge Rectifiers become operational when the unit is connected to the ac source. The 160V source can be read at the output of the bridge. If the 160V is not present, repair of the Bridge Rectifier or the ac input circuit will be necessary. For the TV Set to operate, the Microcomputer must be operational. The Microcomputer becomes operational by providing 5V from the 5V Regulator, Q410. The 5V Supply can be checked at TP10 and is always present when the set is connected to the 120Vac source.

Y1/Y4 CLOSED CAPTION DECODER

The Closed Caption Decoder will display closed caption on the screen when the transmitting station transmits the signal. Figure 4 shows the circuit diagram of the Closed Caption Decoder. Video goes through buffer Q381 to Pin 11 of IC355. The video goes through a clamp to a Data Slicer and Sync Slicer. Horizontal sync enters Pin 8 to sync the VCO to the video horizontal timing. From the VCO, horizontal timing goes back into the loop and to the Timing Logic. The Sync Slicer sends the vertical sync to the Vertical Counter and Control circuit. The output of the Vertical Counter and Control sets the clamp level and the sync slicer level.

The Data Slicer uses timing from the Timing Logic to pick the closed caption out of the signal. From the slicer, the data signal goes to the Data Recovery, which uses an input from the Data Clock Recovery circuit, for cleaning up the digital data information. The Data Recovery circuit sends data to the Data Modulator and Transfer Buffer. It also sends a data present signal to the Command Processor. The other information for the Command Processor comes from the Decoder Control circuit. The Decoder Control uses inputs from the TV Microcomputer on Pins 1, and 18. Power up reset enters IC355 on Pin 2. The Command Processor, during closed caption transmission, allows the Data Modulator and Transfer Buffer to send the closed caption information through the Display RAM, the Character ROM, and into the Output Logic. The Output Logic sends the closed caption out as red, green, blue, and a Fast Blanking signal that develops the box that holds the information on screen. This information goes to IC360 to be gated into the graphics data going from the Microcomputer to the Chroma/Luminance process in IC270.

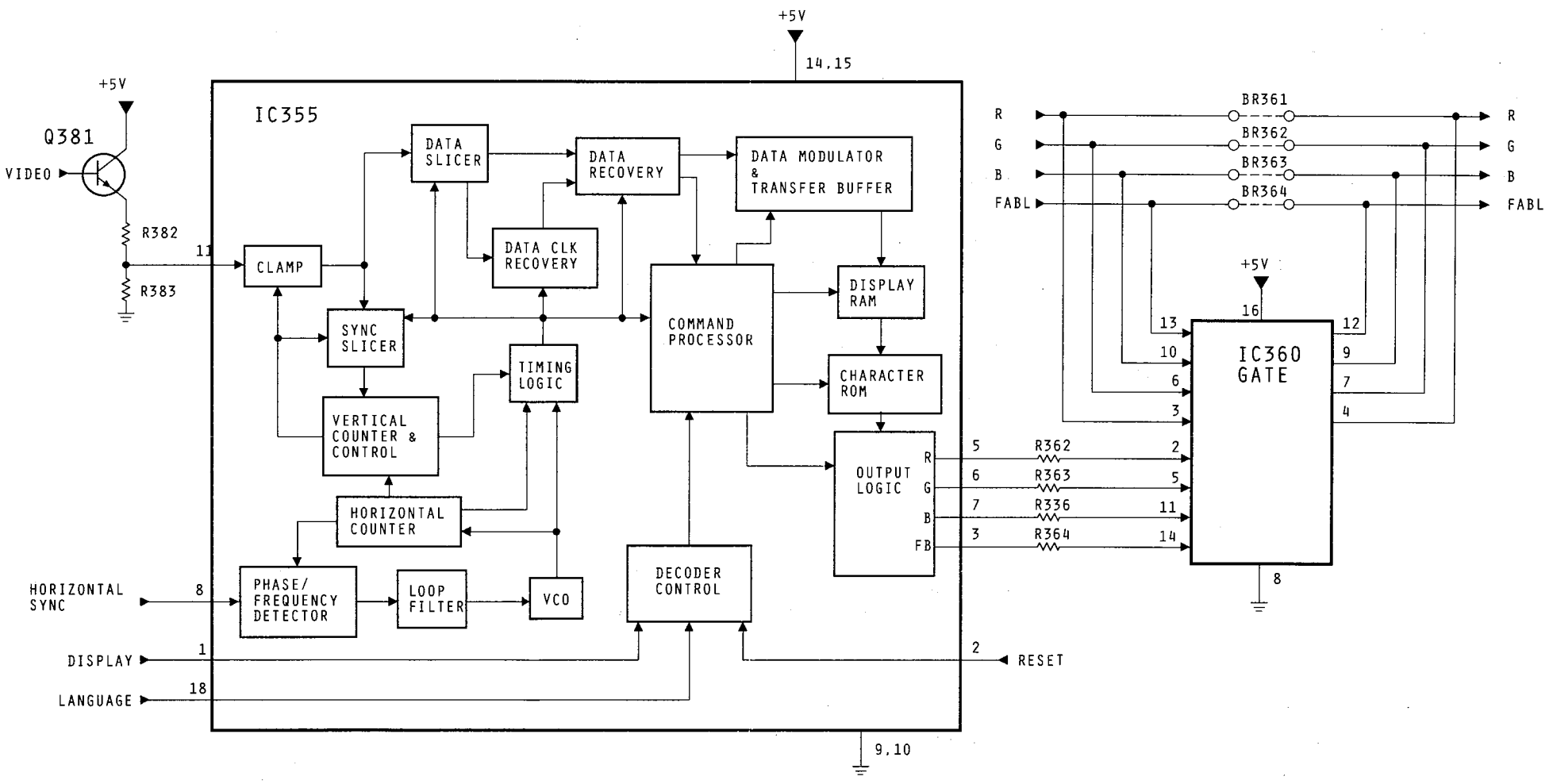


Figure 4 - Y1/Y4 Closed Caption Decoder

CHASSIS IDENTIFICATION

An identification label is located on the outside of the cabinet back. The first four characters (27Y1) indicate the basic chassis series. The next two numbers (01) indicate a function of the chassis, such as the type of tuning system (Remote or Non-Remote), an important production change, or a special group of chassis. The last two letters (AA) are used to identify production changes that do not affect the basic function of the chassis versions. Minor changes may not be identified within the letters, however, they will be called out on the schematic as Early Production (E.P.) and Late Production (L.P.) changes. When ordering parts or requesting technical assistance or information, the complete chassis number must be supplied (e.g., 27Y101-00AA).

INTERCHANGEABILITY NOTICE

Important: While the following holds true in most cases, always refer to the most up-to-date service information for confirmation of interchangeability.

CHASSIS IDENTIFICATION

The 8 digit Base No. identifies a family of assemblies. The remaining 4 characters (called the Group No.) indicate the type of interchangeability within the family.

Example: 00APP008 A001

Base No. Group No.

Note: Families having different Base Nos. cannot be interchanged.

The ninth digit (first digit of the Group No.) identifies the group interchangeability level. This will be an alpha character. Higher groups may replace lower groups, but lower groups cannot be substituted for higher groups.

Example: 00APP008 A001
00APP008 B002
00APP008 C003

00APP008 B002 can be replaced by a C003 but not by an A001. In addition, a C003 can be used in place of either a B002 or a A001.

The last two digits of the identification number indicate running changes. When a particular identification number is initially assigned, it will be A001. Any change which does not significantly change the operational characteristics or the external wiring configuration is a running change within the group. This allows bi-directional interchangeability within the group.

Example: A001 can be used in place of A003, and A003 can be used in place of A001. However, if a significant change does occur which will only allow higher revision substitution, the group identifier (9th position character) must change.

Example: 00APP008 A001 (Early Production)
00APP008 A002
00APP008 B003
00APP008 B004
00APP008 B005
00APP008 B006 (Late Production)

00APP008 A001 is the initial identification number. All assemblies in the "A" group (9th position character) are interchangeable with each other. All of the assemblies in the "B" group interchangeable with each other, and any "B" group assembly can be substituted for an "A" group. However, an "A" group assembly cannot be substituted for a "B" group assembly.

NOTE: THROUGHOUT THIS MANUAL THE MAIN CHASSIS ASSEMBLIES WILL BE REFERRED TO AS Y1 AND/OR Y4 MAIN CHASSIS ASSEMBLIES.

Y1 = EMY101, EMY117, EMY119, EMY122, EMY123, EMY124, EMY127, EMY128, EMY129, EMY131, EMY133, EMY136, EMY141, EMY155, EMY157, EMY184, EMY185, VERSIONS

Y4 = EMY401, EMY402, EMY403, EMY404, EMY407, EMY409, EMY412, EMY413, EMY422, EMY423, EMY430, EMY431, EMY445, EMY450, EMY470, EMY475, EMY479, EMY481, EMY493 VERSIONS

UNLESS A CHASSIS IS SPECIALLY CALLED OUT (EXAMPLE: EMY117) Y1 AND/OR Y4 WILL REFER TO ALL THE ABOVE MENTIONED CHASSIS.

Y1 MODEL TO CHASSIS LIST

Model	Screen Size	Chassis Ref.
Magnavox		
HD1926C401	19"	19Y106
RR1933W401	19"	19Y101
RR1924C401	19"	19Y103
RR1943C401	19"	19Y103
RR1947W401	19"	19Y103
RR1948W401	19"	19Y103
RR1942C401	19"	19Y101
RS1962B401	19"	19Y102
MD2022C301	19"	19Y105
XR1939C401	19"	19Y101
RR2042C4	20"	20Y100
RS2051C4	20"	20Y101
RS206504	20"	20Y101
CR4523A4	25"	25Y104
CR4524P4	25"	25Y104
CS4537A4	25"	25Y105
CS4538P4	25"	25Y105
CS4540A4	25"	25Y105
HD2506C4	25"	25Y100
HD2507C4	25"	25Y101
MD2603C3	25"	25Y106
RR2541A4	25"	25Y100
RR2547A4	25"	25Y100
RS2556A4	25"	25Y101
RS2564C4	25"	25Y101
RS2568C4	25"	25Y105
XR2541C4	25"	25Y108
XS2564C4	25"	25Y109
XS2568C4	25"	25Y109
RP2546A4	25"	25Y103
RP2576C4	25"	25Y102
RR2535W4	25"	25Y111
RS2555A4	25"	25Y105
RS2565B4	25"	25Y105
XS2565B4	25"	25Y110
CS4742A4	27"	27Y100
CS4744P4	27"	27Y100
HD2763C4	27"	27Y100
RR2741A4	27"	27Y101
RS2744A4	27"	27Y100
RS2756C4	27"	27Y100
XS2744A4	27"	27Y104
RS2761B4	27"	27Y105
Philips		
MR2047C301	19"	19Y104
MR2121C3	20"	20Y102
20R200C4	20"	20Y100
MS2126C3	20"	20Y106
20S242C4	20"	20Y104
20X242C4	20"	20Y108
MR2605C3	25"	25Y106
MR2641C3	25"	25Y106
Sylvania		
SRB1965401	19"	19Y101
SRC1960401	19"	19Y101
SRW1969401	19"	19Y101
SRC20214	20"	20Y100
SSC20634	20"	20Y101
SRA45324	25"	25Y104
SRP45344	25"	25Y104
SSA45474	25"	25Y105
SSP45484	25"	25Y105
SRA25304	25"	25Y100
SSB25714	25"	25Y101
SSA47594	27"	27Y103
SSP47604	27"	27Y100
SRA27454	27"	27Y101
SSC27384	27"	27Y100
Philco		
P1920RC401	19"	19Y103
P1923RC401	19"	19Y101
P2505RP4	25"	25Y100
Crosley		
CT1908W401	19"	19Y103
CC2536P4	25"	25Y104
CC2537A4	25"	25Y105
CC2538P4	25"	25Y105
CT2514A4	25"	25Y100
CT2524C4	25"	25Y107
CC2734P4	25"	27Y103
CC2747A4	27"	27Y102

Y4 MODEL TO CHASSIS LIST

Model	Screen Size	Chassis Ref.
Magnavox		
HD1321C4	13"	13Y401
MD1422C3	13"	13Y404
RR1333C4	13"	13Y401
RR1338C4	13"	13Y401
XR1333C4	13"	13Y401
XR1342C4	13"	13Y401
RR1340W4	13"	13Y401
RR1342C4	13"	13Y401
RR1350C4	13"	13Y401
RS1356C4	13"	13Y405
RS1365C4	13"	13Y402
RR1933W421	19"	19Y400
HD1924C421	19"	19Y403
HD1926C421	19"	19Y401
RS1962B421	19"	19Y411
RS1966B421	19"	91Y402
RS1972C421	19"	19Y402
MD2022C321	19"	19Y404
RR1939C421	19"	19Y403
XR1939C421	19"	19Y400
RR1942C421	19"	19Y400
RR1943C421	19"	19Y403
RR1947W421	19"	19Y403
RR1948C421	19"	19Y403
Philips		
13R210C4	13"	13Y403
13S260C4	13"	13Y402
13X260C4	13"	13Y402
MR1423C3	13"	13Y401
MR1431C3	13"	13Y404
MR1446C3	13"	13Y404
MS1462C3	13"	13Y406
MR2004C321	19"	19Y406
MR2023C321	19"	19Y404
MR2004C321	19"	19Y406
MR2047C321	19"	19Y406
MS2010C321	19"	19Y405
Sylvania		
SRC13614	13"	13Y401
SRB13654	13"	13Y401
SRC1960421	19"	19Y400
SRB1965421	19"	19Y400
SRW1969421	19"	19Y400
SSC1956421	19"	19Y402
SRB1965421	19"	19Y400
Philco		
P1320RC4	13"	13Y401
P1321RC4	13"	13Y401
P1920RC422	19"	19Y403
P1923RC421	19"	19Y400
Crosley		
CT1320W4	13"	13Y401
CT1908W421	19"	19Y403
CT1912C421	19"	19Y408

NOTE: THE LOCATION OF INFORMATION IN THIS MANUAL IS INDICATED BY BOTH PAGE NUMBER AND MICROFICHE FRAME NUMBER. PAPER MANUAL USERS SHOULD REFER TO ONLY THE PAGE NUMBERS. MICROFICHE USERS SHOULD REFER TO ONLY THE MICROFICHE FRAME NUMBERS.

CHASSIS BREAK-DOWN NOTES

1. **WHEN AN ITEM OR GROUP OF ITEMS IS DESCRIBED AS A PANEL OR MODULE, THIS INDICATES THAT IT IS A NORMALLY STOCKED ITEM AND MAY BE REPLACED IN ITS ENTIRETY. WHEN A GROUP OF ITEMS IS REFERRED TO AS AN ASSEMBLY, THIS INDICATES A NON-REPLACEABLE/REPAIR ONLY TYPE OF ITEM (NOT NORMALLY STOCKED).**
2. **ITEMS SHOWN INDENTED IN THE LIST BELOW ARE SUB-ASSEMBLY TYPE ITEMS TO THE LARGER ASSEMBLY LISTED ABOVE IT.**

*** INDICATES A "NON-REPLACEABLE/REPAIR ONLY "TYPE ASSEMBLY.**

Y1 CHASSIS BREAKDOWN LIST

			Schematic Diagram Page/Frame
19Y100			
	00ALR010	Remote Receiver Module	NA/NA
	00APP008	PIP Module	37/D1
	00APT110	CRT Module	23/I-11
	00ASW105	Keyboard Module	20 (G8)
	00AVJ126	Jack Panel Module	35/(J1)
*	00EMY135	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: RR1946			
19Y01			
	00APT110	CRT Module	23/I-11
*	00EMY107	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: RR1933			
19Y102			
	00APT110	CRT Module	23/I-11
	00ASD021	Stereo Module	33/(D1)
*	00EMY150	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: RS1962			
19Y103			
	00ALR010	Remote Receiver Module	NA/NA
	00APT110	CRT Module	23/I-11
	00ASW105	Keyboard Module	20/(G8)
*	00EMY109	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: HD1924			
19Y104			
	00APT110	CRT Module	23/I-11
*	00EMY174	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: MR2047			
19Y105			
	00ALR010	Remote Receiver Module	NA/NA
	00APT110	CRT Module	23/I-11
	00ASW105	Keyboard Module	20/(G8)
*	00EMY175	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: MD2022			
19Y106			
	00APT110	CRT Module	23/I-11
	00ASD020	Stereo Module	33/D1
	00AVJ129	Jack Panel Module	35/(J1)
*	00EMY112	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: HD1926			
20Y100			
	00APT110	CRT Module	23/I-11
	00EMY117	20" Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: RR2042			
20Y101			
	00APT110	CRT Module	23/I-11
	00ALR010	Remote Receiver Module	NA/NA
	00ASD020	Stereo Module	33/(D1)
	00ASW105	Keyboard Module	20/(G8)
	00AVJ129	Jack Panel Module	35/(J1)
*	00EMY119	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: RS2051			
20Y102			
	00APT110	CRT Module	23/I-11
*	00EMY184	20" Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: MD2142			
20Y103			
	00APT110	CRT Module	23/I-11
	00ALR010	Remote Receiver Module	NA/NA
	00ASD020	Stereo Module	33/(D1)
	00ASW105	Keyboard Module	20/(G8)
	00AVJ129	Jack Panel Module	35/(J1)
*	00EMY185	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: MD2152			
20Y104			
	00APT110	CRT Module	23/I-11
	00ASD020	Stereo Module	33/(D1)
	00AVJ131	Jack Panel Module	35/(J1)
*	00EMY155	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: 20S242			
20Y105			
	00APT110	CRT Module	23/I-11
	00AVJ127	Jack Panel Module	35/(J1)
*	00EMY136	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: 20R241			
20Y106			
	00APT110	CRT Module	23/I-11
	00ASD020	Stereo Model	33/(D1)
	00AVJ129	Jack Panel Module	35/(J1)
*	00EMY188	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: MS2126			
20Y107			
	00APT110	CRT Module	23/I-11
	00ASD020	Stereo Module	33/(D1)
	00AVJ129	Jack Panel Module	35/(J1)
*	00EMY141	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: MS2127			
20Y108			
	00APT110	CRT Module	23/I-11
	00ASD020	Stereo Module	33/(D1)
	00AVJ131	Jack Panel Module	35/(J1)
*	00EMY157	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: 20X242			
25Y100			
	00APT111	CRT Module	23/I-11
	00ALR010	Remote Receiver Module	NA/NA
	00ASW105	Keyboard Module	20/(G8)
*	00EMY122	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: CR4523			

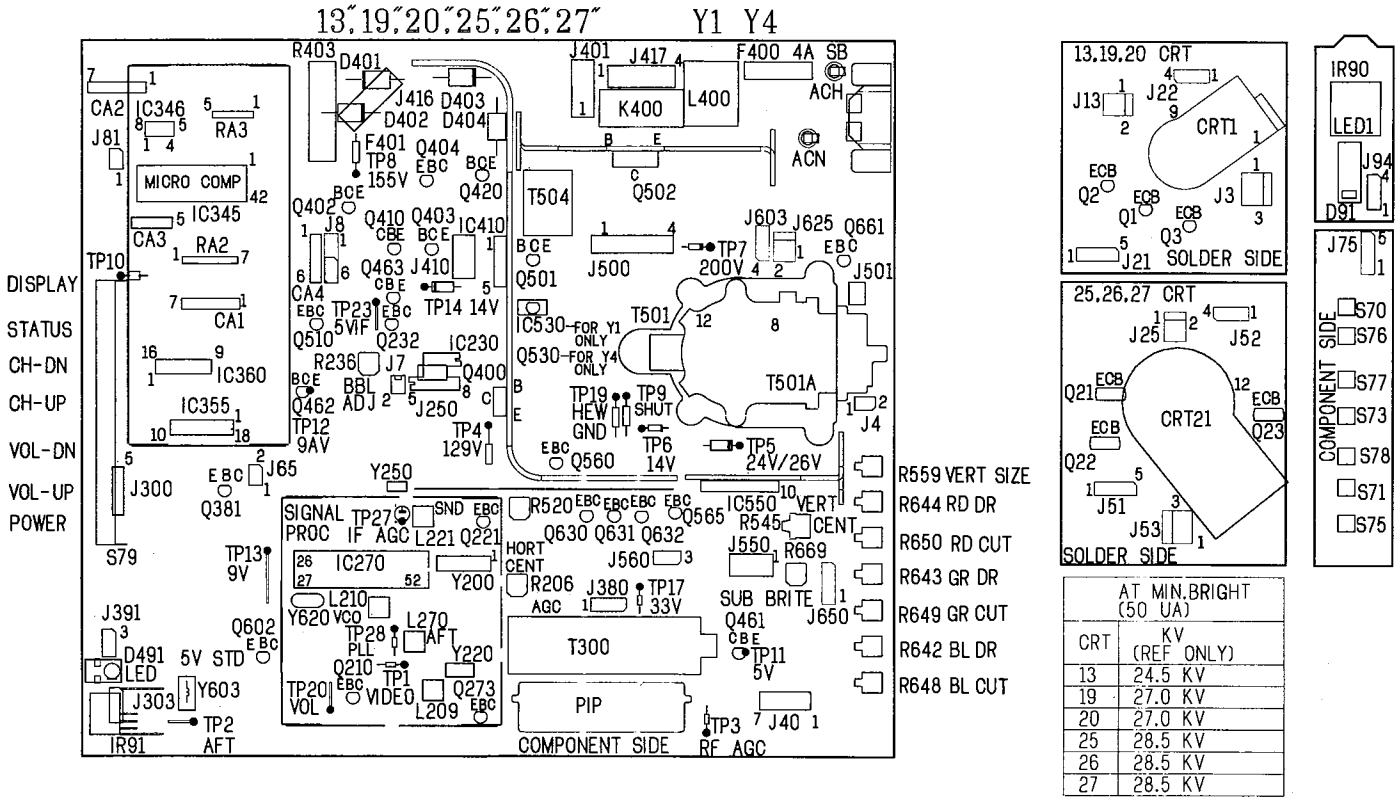
Y1 CHASSIS BREAKDOWN LIST (continued)

			Schematic Diagram Page/Frame
25Y102			
	00APT111	CRT Module	23/I-11
	00ALR010	Remote Module	NA/NA
	00ASD020	Stereo Module	33/(D1)
	00APP008	PIP Module	37/D1
	00ASW105	Keyboard Module	20/(G8)
	00AVJ128	Jack Panel Module	35/(J1)
*	00EMY129	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: RP2576			
25Y103			
	00APT111	CRT Module	23/I-11
	00ALR010	Remote Module	NA/NA
	00APP008	PIP Module	37/D1
	00ASW105	Keyboard Module	20/(G8)
	00AVJ126	Jack Panel Module	35/(J1)
*	00EMY124	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: RP2546			
25Y104			
	00ALR010	Remote Receiver Module	NA/NA
	00APT111	CRT Module	23/I-11
	00ASW105	Keyboard Module	20/(G8)
*	00EMY122	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: CR4523			
25Y105			
	00APT111	CRT Module	23/I-11
	00ALR010	Remote Receiver Module	NA/NA
	00ASD020	Stereo Module	33/(D1)
	00ASW105	Keyboard Module	20/(G8)
	00AVJ129	Jack Panel Module	35/(J1)
*	00EMY127	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: CS4537			
25Y106			
	00ALR010	Remote Receiver Module	NA/NA
	00APT111	CRT Module	23/I-11
	00ASW105	Keyboard Module	20/(G8)
*	00EMY101	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: MR2641			
25Y107			
	00APT111	CRT Module	23/I-11
	00ASD020	Stereo Module	33/(D1)
	00ALR010	Remote Receiver Module	NA/NA
	00ASW105	Keyboard Module	20/(G8)
	00AVJ129	Jack Panel Module	35/(J1)
*	00EMY128	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Module: CT2524			
25Y108			
	00ALR010	Remote Receiver Module	NA/NA
	00APT111	CRT Module	23/I-11
	00ASW105	Keyboard Module	20(G8)
*	00EMY123	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: XR2541			
25Y109			
	00ALR010	Remote Receiver Module	NA/NA
	00APT111	CRT Module	23/I-11
	00ASD020	Stereo Module	33/(D1)
	00ASW105	Keyboard Module	20/(G8)
	00AVJ129	Jack Panel Module	35/(J1)
*	00EMY128	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: XS2568			
25Y110			
	00ALR010	Remote Receiver Module	NA/NA
	00APT111	CRT Module	23/I-11
	00ASD020	Stereo Module	33/(D1)
	00ASW105	Keyboard Module	20/(G8)
	00AVJ129	Jack Panel Module	35/(J1)
*	00EMY128	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: XS2565			
25Y111			
	00ALR010	Remote Receiver Module	NA/NA
	00APT111	CRT Module	23/I-11
	00ASW105	Keyboard Module	20/(G8)
*	00EMY122	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: RR2535			
27Y101			
	00APT111	CRT Module	23/I-11
	00ALR010	Remote Receiver Module	NA/NA
	00ASW105	Keyboard Module	20/(G8)
*	00EMY131	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: RR2741			
27Y102			
	00ALR010	Remote Receiver Module	NA/NA
	00APP008	PIP Module	37/D1
	00APT111	CRT Module	23/I-11
	00ASD020	Stereo Module	33/(D1)
	00ASW105	Keyboard Module	20/(G8)
	00AVJ130	Jack Panel Module	35/(J1)
*	00EMY158	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: CC2747			
27Y103			
	00ALR010	Remote Receiver Module	NA/NA
	00APT111	CRT Module	23/I-11
	00ASD020	Stereo Module	33/(D1)
	00ASW105	Keyboard Module	20/(G8)
	00AVJ131	Jack Panel Module	35/(J1)
*	00EMY133	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: SSA475			
27Y104			
	00ALR010	Remote Receiver Module	NA/NA
	00APT111	CRT Module	23/I-11
	00ASD020	Stereo Module	33/(D1)
	00ASW105	Keyboard Module	20/(G8)
	00AVJ129	Jack Panel Module	35/(J1)
*	00EMY134	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: CT2733			
27Y105			
	00ALR010	Remote Receiver Module	NA/NA
	00APT111	CRT Module	23/I-11
	00ASD020	Stereo Module	33/(D1)
	00ASW105	Keyboard Module	20/(G8)
	00AVJ131	Jack Panel Module	35/(J1)
*	00EMY133	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: RS2761			
27Y106			
	00ALR010	Remote Receiver Module	NA/NA
	00APP008	PIP Module	37/D1
	00APT111	CRT Module	23/I-11
	00ASD020	Stereo Module	33/(D1)
	00ASW105	Keyboard Module	20/(G8)
	00AVJ128	Jack Panel Module	35/(J1)
*	00EMY158	Main Chassis	20/(G8)
	00340313	Varactor Tuner Module	39/D9
Typical Model: RP2739			

Y4 CHASSIS BREAKDOWN LIST

		Schematic Diagram Page/Frame
13Y401		
APT110	CRT Module	23/I-11
* 00EMY401	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: RR1333		
13Y402		
00APT110	CRT Module	23/I-11
00ASD020	Stereo Module	33/(D1)
00AVJ129	Jack Panel Module	35/(J1)
* 00EMY404	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: SR1365		
13Y403		
00APT110	CRT Module	23/I-11
00AVJ127	Jack Panel Module	35/(J1)
* 00EMY402	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: 13R210		
13Y404		
00APT110	CRT Module	23/I-11
* 00EMY470	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: MD1422		
13Y405		
00APT110	CRT Module	23/I-11
00ASD021	Stereo Module	33/(D1)
* 00EMY403	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: SR1356		
13Y406		
00APT110	CRT Module	23/I-11
* 00EMY493	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: MS1462		
13Y407		
00APT110	CRT Module	23/I-11
* 00EMY422	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: MR1447		
13Y408		
00APT110	CRT Module	23/I-11
00ASD021	Stereo Module	33/(D1)
* 00EMY423	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: MS1463		
13Y409		
00APT110	CRT Module	23/I-11
00ASD020	Stereo Module	33/(D1)
00AVJ129	Jack Panel Module	35/(J1)
* 00EMY409	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: 13X260		
19Y400		
00APT110	CRT Module	23/I-11
* 00EMY407	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: SRB196		
19Y401		
00APT110	CRT Module	23/I-11
00ASD020	Stereo Module	33/(D1)
00AVJ129	Jack Panel Module	35/(J1)
* 00EMY412	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: HD1926		
19Y402		
00APT110	CRT Module	23/I-11
00ALR010	Remote Receiver Module	NA/NA
00ASD020	Stereo Module	33/(D1)
00ASW105	Keyboard Module	20/(G8)
00AVJ129	Jack Panel Module	35/(J1)
* 00EMY413	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: RS1966		

		Schematic Diagram Page/Frame
19Y403		
00APT110	CRT Module	23/I-11
00ALR010	Remote Receiver Module	NA/NA
00ASW105	Keyboard Module	20/(G8)
* 00EMY409	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: P1920R		
19Y404		
00APT110	CRT Module	23/I-11
00ALR010	Remote Receiver Module	NA/NA
00ASW105	Keyboard Module	20/(G8)
* 00EMY475	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: MD2022		
19Y405		
00APT110	CRT Module	23/I-11
00ALR010	Remote Receiver Module	NA/NA
00ASD020	Stereo Module	33/(D1)
00ASW105	Keyboard Module	20/(G8)
00AVJ129	Jack Panel Module	35/(J1)
* 00EMY481	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: MS2010		
19Y406		
00APT110	CRT Module	23/I-11
* 00EMY474	19" Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: MR2004		
19Y407		
00APT110	CRT Module	23/I-11
00ASD020	Stereo Module	33/(D1)
00AVJ129	Jack Panel Module	35/(J1)
* 00EMY479	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: MP2060		
19Y408		
00APT110	CRT Module	23/I-11
00ASD020	Stereo Module	33/(D1)
00AVJ129	Jack Panel Module	35/(J1)
* 00EMY445	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: CT1912		
19Y409		
00APT110	CRT Module	23/I-11
* 00EMY430	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: MR2005		
19Y410		
00APT110	CRT Module	23/I-11
00ASD020	Stereo Module	33/(D1)
00AVJ129	Jack Panel Module	35/(J1)
* 00EMY431	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: MS2012		
19Y411		
00APT110	CRT Module	23/I-11
00ASD021	Stereo Module	33/(D1)
* 00EMY450	Main Chassis	20/(G8)
00340313	Varactor Tuner Module	39/D9
Typical Model: RS1962		



CRT	AT MIN.BRIGHT (50 UA) KV (REF ONLY)
13	24.5 KV
19	27.0 KV
20	27.0 KV
25	28.5 KV
26	28.5 KV
27	28.5 KV

Figure 5 - Component Location Chart

Y1/Y4 CHASSIS SERVICE ADJUSTMENTS

Caution: The Y1/Y4 Chassis incorporates a "HOT" ground system. Always use a separate isolation transformer when applying power to the exposed chassis.

Service Adjustment Notes:

Unless Otherwise Specified:

1. All service adjustments are "HOT" voltagewise. For maximum safety, ensure the use of properly insulated tools.
2. Refer to the Y1\Y4 Chassis Layout Diagram (Figure 5) for a quick location of test points or service adjustable controls.
3. Grid locations refer to the Printed Circuit Board Artwork.

Focus

1. Tune in a local station and adjust the Focus Control for best picture detail at high light condition.

R.F. AGC Delay

1. Tune to a weak station, or loosely couple the antenna to observe a snowy picture.
2. Set the R.F. AGC Delay (R206, Grid Location C3) to it's fully clockwise (CW) position.
3. Slowly turn R206 counterclockwise (CCW) to a point slightly beyond the point of minimum snow.

NOTE: Do not turn the control any further as it may result in an overloaded picture on the face of the CRT (caused by a strong station signal).

IF/AFT Alignment

1. Ensure that the set is in the Broadcast Mode (normal) and tune the receiver to a good local air signal.
2. Temporally place a jumper from Pin 41 (Coincidence) of IC270 to ground.
3. Connect a DC Voltmeter (input impedance 10 megohm or more) to Test Point 2 (TP2; grid location B4).
4. Preset L270 (AFT Coil; grid location B4) to place its core at the bottom of the can.
5. With an initial voltage reading of 8Vdc on the meter, slowly begin turning the core of L210 counterclockwise (CCW). When entering the AFT curve, the voltage will begin to drop suddenly. Within the slope of this curve (less than 1/4 turn), adjust L270 to achieve a reading of exactly 2.5Vdc on the meter.
6. Remove the RF signal from the receiver and disconnect the jumper.
7. Temporally connect a jumper from Test Point 27 (TP27; grid location D3) to ground.
8. Measure and record the DC voltage reading at Test Point 28 (TP28; grid location D3) to within 1/100th of a volt.

NOTE: The voltage reading of a properly operating set should be approximately 3.38Vdc.

9. Remove the jumper from Test Point 27 and reconnect the RF Signal to the receiver.
10. With the set tuned to the RF Signal, adjust L210 (45.75MHz. VCO Adj.; grid location C4) to achieve the same voltage as recorded in step 8 (approximately 3.38Vdc).

IF/AFT Alignment (continued)

NOTE: It is extremely important to the performance of the chassis that this voltage is adjusted as accurately as possible.

Sound Discriminator

1. Select an active channel and loosely couple the antenna until noise/distortion is apparent in the output.
2. While keeping input signal weak enough to produce noise, adjust L221 (Sound Discriminator Adj.; grid location H5) for maximum output and minimum distortion.

4.5MHz Trap Adjustment (Certain Models only)

NOTE: This adjustment is performed on a Cold Chassis (no AC power applied).

1. Inject a 4.5MHz. signal, 50% AM with 1kHz. at 100mV at the junction of R212 and L211 (grid location C5).
2. Connect the high impedance detector probe of an oscilloscope to Test Point 1 (TP1; grid location B4).
3. Adjust L209 (4.5MHz. Trap; grid location C4) for a minimum detected 1kHz. signal.

Vertical Height & Centering Adjustment

1. Apply a crosshatch pattern to the antenna input terminals.
2. Adjust the Vertical Size Control (R559; grid location D7) to obtain a slight underscan of the raster at the top and bottom portions of the screen.
3. If the raster is not centered, adjust the Vertical Centering Control (R545; grid location K2) to center the raster properly on the screen.
4. Adjust the Vertical Size Control (R559) to obtain a slight overscan at the top and bottom portions of the screen (approximately 8% overscan total).

Horizontal Centering Adjustment

1. Apply a cross hatch pattern to the antenna input terminals.
2. Adjust the Horizontal Centering Control (R520; grid location F2) to obtain proper horizontal centering of the crosshatch pattern at the left and right of the screen.

Adjusting The Picture

NOTE: The Color Purity and Convergence Adjustments described below should be performed only after installation of a new CRT or Deflection Yoke Assembly; otherwise, it will not be necessary to remove the rubber wedges. Minor corrections for purity and convergence can be accomplished through the use of the Purity and Convergence Assembly located on the neck on the CRT.

CONVERGENCE AND PURITY ADJUSTMENT PROCEDURE

Degaussing the receiver

1. Position the TV receiver so that the screen faces the direction it will be facing, while in use.
2. Before the set is turned on, thoroughly Degauss the entire receiver.

Degaussing the Receiver (continued)

a. Move a Degaussing Coil in a circular motion slowly around the sides and the front face plate of the receiver.
b. Withdraw the Degaussing Coil at least six feet before disconnecting it from it's power source.

Pre-Convergence Adjustments

NOTE: Some sets may have only 3 sets of Purity Rings, others will have 4 sets of Purity Rings (see Fig. 6A or 6B). Refer to the Zero Correction Illustration that resembles the set being serviced.

1. Place the multi-pole Purity and Convergence Assembly with the 2-Y pole Purity Rings directly in the gap between the G2 and G3 (Focus) Grids. (As shown in Figure 6A or 6B)
2. Connect a Center Cross pattern or a Crosshatch pattern to the Antenna terminals.
3. Set the Green Cutoff control (R649) to its fully clockwise (CW) position.
4. Set the Green Drive control (R643) to its fully counterclockwise (CCW) position.
5. Loosen the Yoke Clamp screws, pull the Yoke back and remove the three Yoke wedges.
6. Slide the yoke all the way forward so that it rests against the base of the CRT.
7. Tighten the Yoke Clamp screw so that the Yoke doesn't drop away from the base of the CRT.
8. Slowly spread and, if necessary, rotate the 2-Y pole purity rings so that the red and blue lines are at least parallel and preferably coincide at the 6:00 and 12:00 o'clock position. (Refer to figure 7).

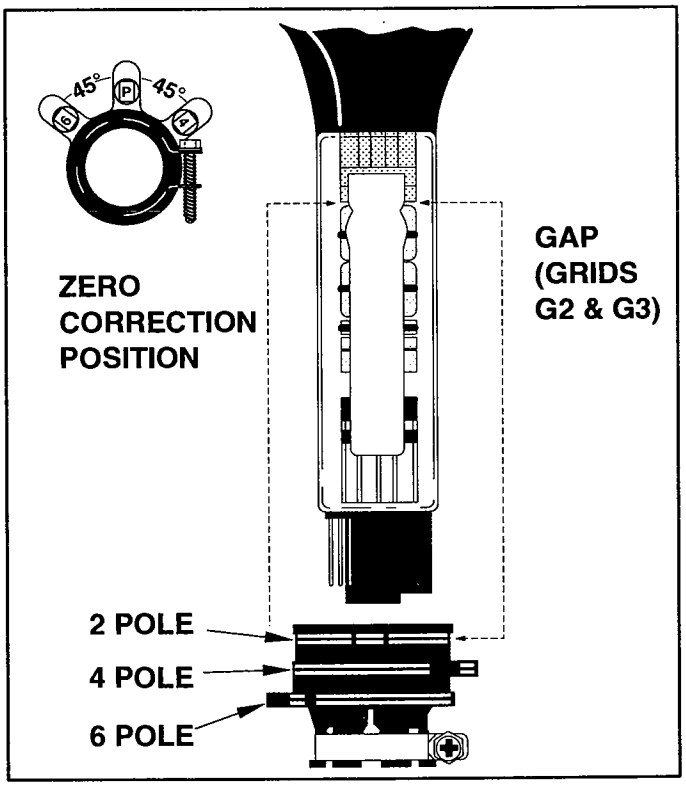


Figure 6a

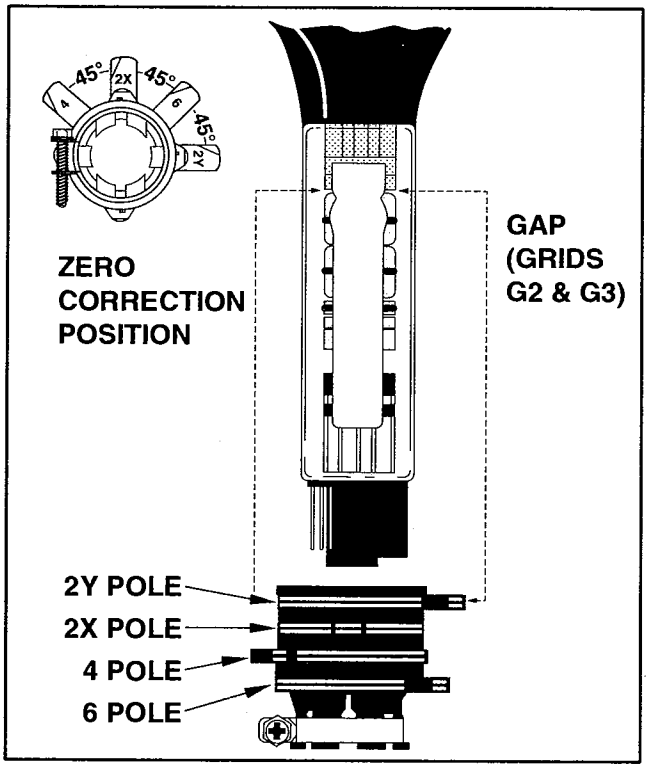


Figure 6b

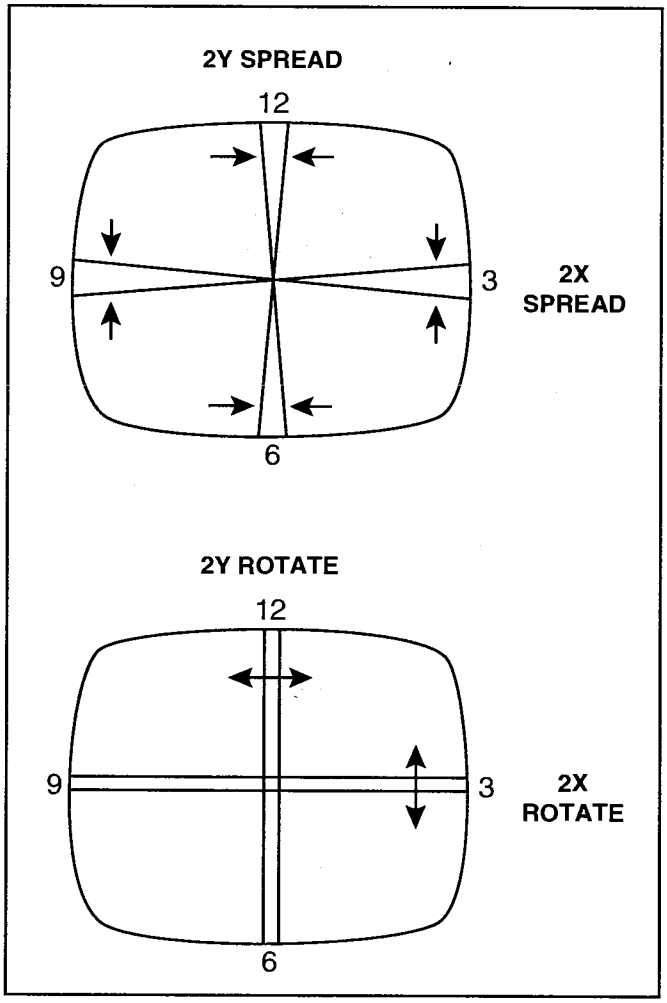


Figure 7

Color Purity Adjustment

1. Connect a White Screen signal to the Antenna terminals.
2. Set the Red Cutoff (R650) and Blue Cutoff (R648) controls fully clockwise (CW). Then set the Red Drive (R644) and Blue Drive (R642) controls fully counterclockwise (CCW).
3. Set the Green Cutoff control (R649) fully counter-clockwise (CCW) and the Green Drive control (R643) Fully clockwise (CW).
4. Slowly spread the 2-X Pole Purity Rings to center the Green portion of the screen leaving the same amount of Red on the left side as there is blue on the right.
5. Loosen the Yoke Clamp screws and slide the Yoke back to the point of best Green Purity.
6. Tighten the Yoke Clamp screw slightly so that the Yoke can still be moved with some friction.
7. Proceed to Static Center Convergence.

Static center convergence

1. Connect a Center Cross pattern or a Crosshatch pattern to the Antenna terminals to ensure that the yoke is not tilted. Rotate the yoke, if necessary, to obtain a level raster.
2. Set the Green Cutoff control (R649) to it's fully clockwise (CW) position.
3. Set the Green Drive control (R643) to it's fully counterclockwise (CCW) position.
4. Set the Red Cutoff (R650) and Blue Cutoff (R648) controls to their midrange positions. Then set the Red Drive (R644) and Blue Drive (R642) controls fully clockwise (CW).
5. Slowly spread and, if necessary, rotate the 4-Pole Magnetic Rings to converge Red and Blue lines at the center of the screen.
6. Set the Green Drive Control (R643) to it's maximum clockwise (CW) position.
7. Adjust the Green Cutoff (R649) to bring it's Gun back up to approximately the same intensity as the Red and Blue Guns.
8. Slowly spread and, if necessary, rotate the 6-Pole Magnetic Rings to converge Red/Blue on Green lines at the center of the screen.
9. Repeat steps 5 through 8 for optimum performance.

Dynamic Edge Convergence

NOTE: To secure the correct position of the Deflection Yoke, three rubber wedges are used. They are ultimately to be placed as shown in Figure 8c or 9c.

1. Apply a crosshatch pattern signal to the Antenna terminals and set the Green Drive control (R643) to it's fully counter-clockwise (CCW) position.
2. Set the Green Cutoff control (R649) to it's fully clockwise (CW) position.
3. Tilt the Yoke up and down to converge the Red and Blue vertical lines at the 6 and 12 o'clock positions, and the Red and Blue horizontal lines at the 3 and 9 o'clock positions (see Figure 10). When the correct position has been found, place a rubber wedge between the Yoke and the CRT. If the Yoke is tilted UP, place wedge 1 as shown in Figure 8a; if it is tilted DOWN ,place wedge 1 as shown in Figure 9a.

Dynamic Edge Convergence (continued)

4. Tilt the Yoke to the left and right to find the point of best possible convergence of the Red and Blue lines at the edges, top and bottom of the screen as seen in Figure 11. When the correct position is located, place wedges 2 and 3 as seen in Figure 8b or 9b.
5. Now, remove wedge 1 and place it in the final position as shown in Figure 8c or 9c.
6. Set the Green Drive control (R643) to it's fully clockwise (CW) position.
7. Adjust the Green Cutoff control (R649) to bring it's Gun back up to approximately the same intensity as the Red and Blue Guns.
8. Proceed to the White Balance procedure.

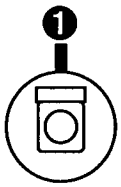


Fig. 8a

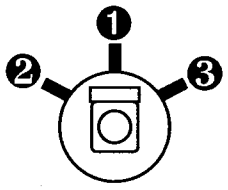


Fig. 8b

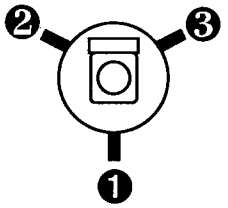


Fig. 8c

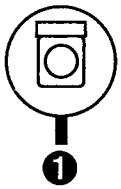


Fig. 9a

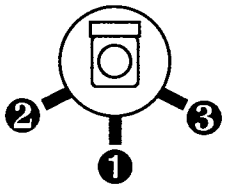


Fig. 9b

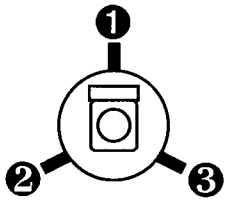


Fig. 9c

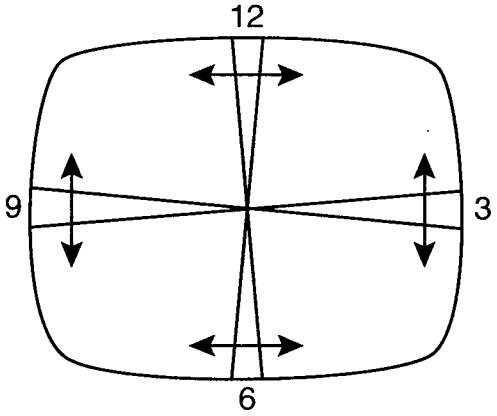


Figure 10 – Tilt the Yoke up and down to converge the Red and Blue vertical lines at the 6 and 12 o'clock positions, and the Red and Blue horizontal lines at the 3 and 9 o'clock positions.

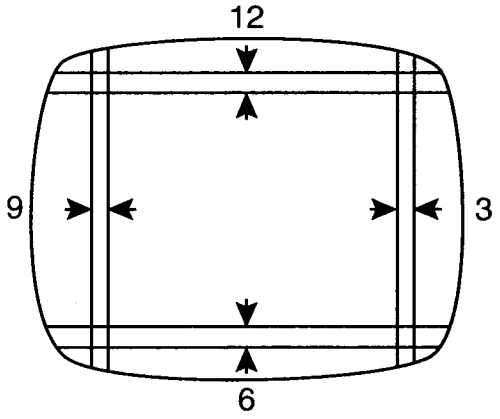


Figure 11 – Tilt the Yoke to the left and right to converge Red and Blue lines at the 6 and 12 o'clock positions, and Red and Blue vertical lines at the 3 and 9 o'clock position.

White Balance

1. Disconnect antenna to ensure that no signal is being received.
2. Set the Customer Color Control to minimum. All other Customer Controls (Brightness, Picture, Sharpness and Tint) are to be set for their mid-range positions.
3. Adjust the G2 (Master Screen) Control to it's minimum (fully counterclockwise; CCW) position.
4. Set the Color Drive Controls (R642, R643 and R644) to their fully counterclockwise (CCW) positions.
5. Set the Color Cut-Off Controls (R648, R649 and R650) to their fully counterclockwise (CCW) positions.
6. Turn the set Off and disconnect the Vertical Yoke Plug (P550) to temporary collapse the Vertical Raster.
7. Turn the set On and advance the G2 Control clockwise (CW) until a horizontal appears across the screen. Decrease G2 (CCW) to the point where the line just disappears from the screen (no trace visible).
8. Turn the set off and reposition all Cut-Off and Drives Controls to their maximum clockwise (CW) positions.
9. Turn the set on and note the color of the horizontal line. Adjust the Cut-Off Controls of the other two corresponding guns to achieve a balanced white line on the screen.

NOTE: Some picture tubes may have 2 or 3 guns balanced so that they turn On at same time.

10. Turn the set Off and reconnect the Vertical Yoke Plug (P550).
11. Turn the set on and adjust the Customer Color Control to minimum.
12. Turn the set on, tune to a good air signal and adjust the Color Drive Controls for white picture high-lights. Continue to alternately adjust Drive (high-light) Controls and Cut-Off (low-light) Controls (if necessary) until no further adjustments are necessary.

Audio/Video Jack Panel Alignment

- Video Alignment

1. Connect an oscilloscope to TP52 (End of R50).
2. Apply a composite video signal of 1Vp-p to the Aux Video Input (J45).

NOTE: Leader model LCG-396 has a composite video signal output with a preset level of 1Vp-p.

3. Turn the set on and adjust for the following:

For Jack Panels AVJ126 - AVJ129

Turn pot R40 fully clockwise (CW), then adjust R40 for 2Vp-p at TP52. Make sure adjustment is on the correct slope of the response curve, this will be the first point to reach 2.0Vp-p going from the clockwise stop.

For Jack Panels AVJ130 & AVJ131

Turn pot R40 fully counter clockwise (CCW), then adjust R40 for 2Vp-p at TP52. Make sure adjustment is on the correct slope of the response curve, this will be the first point to reach 2Vp-p going from the counter clockwise stop.

- Audio Alignment

1. Connect an oscilloscope to TP53 (negative side of C62).
2. Apply a 1kHz. sine wave audio signal at 1.0Vp-p to the Aux Audio (mono/right) Input Jack (J45).
3. Adjust R60 for 1.5Vp-p at TP53.

For Stereo Jack Panels (00AVJ128 & AVJ129)

4. Connect an oscilloscope to TP54 (negative side of C82).
5. Apply a 1kHz. sine wave audio signal at 1.0Vp-p to the Left Channel Aux Audio Input Jack (J45).
6. Adjust R80 for 1.5Vp-p at TP54.

ASD020 AND ASD021 STEREO MODULE ALIGNMENTS

BASEBAND LEVEL ADJUSTMENT

SETUP: Connect a Leader LMS-238P TV Multi Channel Sound Generator to the television antenna input. Set the generator to output a kHz L+R stereo signal.

1. Using a dual trace oscilloscope connect one probe to TP60 (Pin 17 of IC700) and the other to TP61 (Pin 18 of IC700). Connect both probe grounds to Pin 31 of IC700 (Ground).
2. On the scope, set the Time/Div to 1mS and the Volts/Div to .2V and activate the add A+B function.
3. Turn the set and generator On and adjust the baseband Level pot (R236) to .7Vpp.

SAP/LPF & VCO ADJUSTMENTS

SETUP: Set the Multi Channel Sound Generator to output a SAP signal L-R and Pilot Signal.

1. Step one is the same as step one for Baseband Level Adjust.
2. Adjust R718 (300Hz Adjust) and R715 (3kHz fully clockwise.
3. Adjust R712 (VCO Adjust) fully counterclockwise.
4. Adjust R708 (SAP/LPF Adjust) for maximum amplitude at TP63.
5. Short J210 (baseband input) to ground.

SAP/LPF & VCO ADJUSTMENTS (continued)

6. Measure DC voltage at TP64 (Pin 40 of IC700) voltage approximately 4.4 volts DC.
7. Remove short on J210, Adjust R712 (VCO adjust) slowly till the Stereo LED light comes on.
8. Adjustment of R712 should have the same voltage as TP64 in step 6 (+ or - .1 volt), Stereo LED must remain on.

300Hz & 3kHz Adjustment

1. Set the Multi Channel Sound Generator to 300Hz output, turn SAP off.
2. Select stereo "L" only output
3. Connect oscilloscope to TP60 (Pin 17 of IC700)
4. Adjust R718 (300Hz adjust) for minimum amplitude sinewave.
5. Select 3kHz on the stereo sound generator
6. Leave oscilloscope connected to TP60
7. Adjust R715 (3kHz adjust) for minimum amplitude sinewave
8. Stereo separation at 300Hz & 3kHz should be 25db minimum.

TEST MODE ENTRY

NOTE: T213AG TRANSMITTERS WITH SOME MODELS (YOU MUST USE DISPLAY BUTTON ON SET IN PLACE OF MENU ON TRANSMITTER FOR ENTERING TEST MODE). AFTER ENTERING TEST MODE IT IS NOT POSSIBLE TO CHANGE ANY OF THE REGISTERS OR SCAN CHANNELS WHILE IN THE ADD/ DELETE MODE BY USING THE T213AG TRANSMITTER.

BY USING A PRIOR YEAR 23 OR 25 BUTTON "STICK" TRANSMITTER OR A UNIVERSAL REMOTE YOU CAN PERFORM ALL TEST FUNCTIONS AS SHOWN BELOW.

1. Press the following transmitter keys without allowing the on screen response to time out between entries:
   0 - 6 - 2 - 5 - 9 - 6 - MENU

2. You are now in the service mode. The following is a example of what should be displayed on screen and an explanation of the characters.

GR3A	M1	PRTM	C2
6	C	11	23

TOP LINE

GR3A = Control System
C = Consumer, M = Motel, H = Hospital
1 = 1st Version of the software
PRTM = Error Codes.

P = PIP, R = Remote Locator, T = Tuner, M = Memory

If a letter appears it indicates failed communication or the set does not have these features. These are useful in troubleshooting the control system.

C2 = Closed Caption Channel

A/CH Cycles Closed Caption

Status Toggles Info Display = GR3A-Code Type-Error Codes

(continued)

BOTTOM LINE

6 = Channel Number
C = Test Mode
11 = Register Number
23 = Register value in Hex

3. Channel up/down and number keys will access channels.
4. Registers can be accessed by number's 80 (10) through 93 (23) or by cursor up/down keys.
5. Register values can be changed by pressing the +/- keys.
6. The registers and their factory preset values are as follows:

REGISTER	TYPICAL VALUE	REGISTER DESCRIPTION
10	20	Brightness
11	20	Picture
12	20	Color
13	20	Tint
14	20	Sharpness
15	15	Volume
16	05	PIP X1 (position)
17	28	PIP X2
18	06	PIP Y1
19	2F	PIP Y2
20	08	PIP Read Counter
21	04	PIP Write Counter
22	0A	Horizontal Display Offset
23		Exit

6. To access the PIP service mode while in the "C" service mode press the PIP "ON" button. PIP will appear on the screen. The test mode display will change the register number digit by changing the first digit to a 3_ indicating the PIP adjustment mode. "+/-" will now adjust the position of the PIP in the Horizontal direction. This is the only setup adjustment required for PIP.
7. To save a register, while still in test mode "C" turn power "OFF" at the television set keyboard. Exiting with the power button on the remote transmitter will not save any changes made in the service mode.

SERVICE NOTES

To order parts call the TOLL FREE Philips Sales Center number : 1-800-851-8885

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line * (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips Consumer Electronics Company. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* Broken Line: ▬ ▪ ▬ ▪ ▬ ▪ ▬ ▪ ▬ ▪ ▬

Y1/Y4 GENERAL REPLACEMENT PARTS LIST

Description	Part Number	Description	Part Number
⚠ 13" CRT A34EAE01X	4835 131 27026	⚠ Degaussing Coil 20"	4835 157 97047
⚠ 13" CRT A34JLL40X69	4835 131 27074	⚠ Degaussing Coil 25"	4835 157 97048
⚠ 19" CRT A48AFN22X	4835 131 27058	⚠ Degaussing Coil 27" (Table Models)	4835 157 97051
⚠ 20" CRT A51AFJ02X	4835 131 27055	⚠ Degaussing Coil 27" (Cabinet Models)	4835 157 97057
⚠ 25" CRT A63AFW20X	4835 131 27068	⚠ Convergence & Purity Asm. 13", 19", 20"	4835 150 27007
⚠ 27" CRT A68AFY01X	4835 131 27057	⚠ Convergence & Purity Asm. 25", 27"	4835 150 27004
⚠ Deflection Yoke 13"	4835 150 17004	⚠ AC Cord (Table Models)	4835 321 17007
⚠ Deflection Yoke 19"	4835 150 17023	⚠ AC Cord (Cabinet Models)	4835 321 17006
⚠ Deflection Yoke 20"	4835 150 17081	Speaker 2.25X5"	4835 240 27007
⚠ Deflection Yoke 25"	4835 150 17074	Speaker 2X3.5"	4835 240 27006
⚠ Deflection Yoke 27"	4835 150 17098	Speaker 3" Round	4835 240 37002
⚠ Degaussing Coil 13"	4835 157 97043	Speaker 3x5"	4835 240 37005
⚠ Degaussing Coil 19"	4835 157 97046	⚠ Antenna Isolator	4835 219 47173

Y1/Y4 MAIN CHASSIS REPLACEMENT PARTS LIST

Ref.	Description	Part Number
CAPACITORS		
CA1	Cap Network, .01	4835 122 97003
CA3	Cap Network, 100pF.	4835 122 97076
CA4	Cap Network, 100pF. (Stereo, Lead or DBX/SAP)	4835 122 97077
CA5	Cap Network, 100pF (External Keybd.)	4835 122 97076
C204	100uF., 10V, Electrolytic	4835 124 47127
C205	.022uF., 50V, +80-20%, Ceramic	4835 122 47013
C206	.01uF., 50V, 10%, Ceramic	4835 122 47098
C208	4.7uF., 50V, Electrolytic	4835 124 47072
C209	0.33uF., 50V, Electrolytic	4835 124 47529
C210	150pF., 50V, 5%, Ceramic	4835 122 47042
V211	22uF., 16V, Electrolytic (PIP)	4835 124 47128
C213	620pF., 50V, 5%, Ceramic	4835 122 47368
V214	22uF., 16V, Electrolytic (PIP)	4835 124 47128
C215	620pF., 50V, 5%, Ceramic	4835 122 47368
C216	620pF., 50V, 5%, Ceramic	4835 122 47368
C217	1000pF., 50V, 10%, Ceramic	4835 122 47004
C218	15pF., 50V, 5%, Ceramic	4835 122 47085
C220	220pF., 50V, 10%, Ceramic	4835 122 47006
C222	220pF., 50V, 10%, Ceramic (Stereo Only)	4835 122 47006
C222	3.3nF., 50V, 10%, Ceramic (Mono, Non SAP)	4835 122 47039
C224	1000pF., 50V, 10%, Ceramic	4835 122 47004
C225	4.7uF., 50V, Electrolytic (Mono JP, No Sap or PIP or Str., No PIP w/JP)	4835 124 47072
C230	.01uF., 100V, Polyester 5% (Mono NonSAP)	4835 121 47056
C231	2200uF., 16V, Electrolytic	4835 124 47006
C232	1uF., 50V, Electrolytic (Mono, Non SAP)	4835 124 47045
C234	6800pF., 25V, 10%, Ceramic, Tubular (Mono, Non SAP)	4835 122 17023
C235	.1uF., 100V, Polyester	4822 121 41608
C236	2.2uF., 50V, Electrolytic (DBX/SAP or Mono SAP or Stereo)	4835 124 47049
C241	1uF., 50V, Electrolytic	4835 124 47045
C243	1000pF., 50V, 10%, Ceramic, Tubular (PIP)	4835 122 17014
C243	330pF., 50V, 10%, Ceramic, Tubular (Non PIP)	4835 122 17025
C244	2200pF., 25V, 10%, Ceramic, Tubular (Non PIP)	4835 122 17021
C245	.22uF., 100V, Polyester	4835 121 47038
C248	.47uF., 50V, Electrolytic	4835 124 47055
C250	4.7nF., 50V, 10%, Ceramic	4835 122 47104
C252	1uF., 50V, Electrolytic	4835 124 47045
C255	.01uF., 50V, 10%, Ceramic	4835 122 47098
C256	2200pF., 25V, 10%, Ceramic, Tubular	4835 122 17021
C257	8200pF., 25V, 10%, Ceramic, Tubular	4835 122 17024
C274	.01uF., 25V, 10%, Ceramic, Tubular	4835 122 17026
C278	.0033	4835 122 47039
C306	1000pF., 50V, 10%, Ceramic	4835 122 47004
C314	560pF., 50V, 10%, Ceramic	4835 122 47206
C315	.022uF., 50V, +80-20%, Ceramic	4835 122 47013
C321	.01uF., 25V, 10%, Ceramic, Tubular	4835 122 17026
C323	100pF., 50V, 5%, Ceramic	4835 122 47014
C324	100pF., 50V, 5%, Ceramic	4835 122 47014
C327	.1uF., 100V, Polyester (IC355 Closed Caption)	4822 121 41608
C330	2.2uF., 50V, Electrolytic	4835 124 47049
C331	2200pF (IC355 Closed Caption)	4835 122 47007
C332	.1 (IC355 Closed Caption)	4822 121 41608
C333	1uF., 50V, Electrolytic (IC355 Closed Caption)	4835 124 47045
C334	2.2uF., 50V, Electrolytic (Mono NonSAP)	4835 124 47049
C335	47uF., 10V, Electrolytic	4835 124 47531
C336	330pF., 50V, 10%, Ceramic, Tubular	4835 122 17025
C340	.01uF., 100V, Polyester 5%	4835 121 47056
C354	1000pF., 50V, 10%, Ceramic	4835 122 47004
C355	22uF., 16V, Electrolytic	4835 124 47128
C357	.01uF., 100V, Polyester 5%	4835 121 47056
C360	470uF., 16V	4835 121 47387

Y1/Y4 MAIN CHASSIS
REPLACEMENT PARTS LIST (continued)

Ref.	Description	Part Number
CAPACITORS		
C361	22uF., 50V, Electrolytic	4835 124 47051
C362	1000pF., 50V, 10%, Ceramic	4835 122 47004
C365	100uF., 10V, Electrolytic	4835 124 47127
C382	270pF., 50V, 10%, Ceramic (Closed Cap.)	4835 122 47008
C383	.1uF., 100V, Polyester (Closed Cap.)	4822 121 41608
C385	620pF., 50V, 10%, Ceramic (Closed Cap.)	4835 122 47368
⚠ C400	220nF., 250Vac, Metalized Polyester	4835 122 97047
C401	1000pF., 500V, 10%, Ceramic	4835 122 37027
C402	1000pF., 500V, 10%, Ceramic	4835 122 37027
C403	1000pF., 500V, 10%, Ceramic	4835 122 37027
C404	1000pF., 500V, 10%, Ceramic	4835 122 37027
C405	330uF., 200V, Electrolytic (All 13")	4835 124 47297
C405	470uF., 200V, Electrolytic (All 19"& 20")	4835 124 47097
C405	680uF., 200V, Electrolytic (All 25,26, & 27")	4835 124 47064
C406	100uF., 10V, Electrolytic	4835 124 47127
C413	47uF., 16V, Electrolytic	4835 124 47073
C415	100uF., 10V, Electrolytic	4835 124 47127
C417	1000pF., 500V, 10%, Ceramic	4835 122 37027
C419	2200uF., 16V, Electrolytic	4835 124 47006
C431	3.3uF., 200V (All Y4)	4835 124 47381
C431	3.3uF., 200V (All Y1)	4835 124 47528
C432	100uF., 200V, Electrolytic	4835 124 47255
C445	1000pF., 500V, 10%, Ceramic	4835 122 37027
C447	1000uF., 35V, Electrolytic	4835 124 47013
C458	.022 (IC355 Closed Caption)	4835 122 17027
C459	.01uF., 50V, 10%, Ceramic	4835 122 47098
C460	1000pF., 500V, 10%, Ceramic	4835 122 37027
C461	22uF., 250V, Electrolytic	4835 124 47021
C462	330uF., 10V, Electrolytic	4835 124 47131
C462	330uF., 10V, Electrolytic	4835 124 47131
C463	.01uF., 50V, 10%, Ceramic	4835 122 47098
C464	100uF., 16V, Electrolytic	4835 124 47106
C465	1000pF., 50V, 10%, Ceramic	4835 122 47004
C467	100uF., 16V, Electrolytic (PIP)	4835 124 47106
C470	47uF., 16V, Electrolytic	4835 124 47073
C475	1000pF., 500V, 10%, Ceramic	4835 122 37027
C500	100pF., 50V, 5%, Ceramic	4835 122 47014
C501	470pF., 50V, 10%, Ceramic, Tubular	4835 122 17004
C502	470pF., 500V, 10%, Ceramic	4835 122 47211
C503	1000pF., 500V, 10%, Ceramic	4835 122 37027
C504	.1uF., 250V, Polyester	4835 121 47278
⚠ C505	10nF., 1500V, Polypropylene (25"/26" Non Diode Mod. Models Only)	4835 121 47438
⚠ C505	10nF., 1500V, Polypropylene (27" Non Diode Mod. Models Only)	4835 121 47438
⚠ C505	4.3nF., 1500V, Polypropylene (19" Mono or 20" Mono)	4835 121 47421
⚠ C505	4700pF., 1500V, Polypropylene (All 13")	4835 121 47026
⚠ C505	4.7nF., 1500V, Polypropylene (19" Stereo or 20" Stereo)	4835 121 47026
⚠ C506	820pF.,2kV, 20%, Ceramic (19" & 20" Stereo)	4835 122 57004
⚠ C506	680pF., 2kV, 10%, Ceramic (13" Stereo)	4835 122 47037
⚠ C506	680pF., 2kV, 10%, Ceramic (All 25,26 &27")	4835 122 47037
⚠ C506	180pF. (19" Mono or 20" Mono)	4835 122 57007
C507	430nF., 200V, Polyester (27" Non Diode Mod. Models Only)	4835 121 47047
C507	360nF., 200V, Polyester (19", No PIP)	4835 121 47126
C507	360nF., 200V, Polyester (All 13")	4835 121 47126
C507	270nF, 200V, Polyester (19" with PIP or 20")	4835 121 47024
C507	.47 (25"/26" Non Diode Mod. Models Only)	4835 121 47256
C508	.01uF., 100V, Polyester 5%	4835 121 47056
C509	220pF., 50V, 10%, Ceramic	4835 122 47006
C510	10uF., 200V, Electrolytic	4835 124 47254
C511	39pF., 1kV, 5%, Ceramic	4835 122 47224
C525	1000pF., 100V, Polyester	4835 122 47372
C530	10uF., 100V, Electrolytic	4835 124 47135
C550	100pF., 50V, 5%, Ceramic, Tubular	4835 122 17007

Ref.	Description	Part Number
CAPACITORS (continued)		
C551	100uF., 35V, Electrolytic	4835 124 47047
C552	6.8uF., 50V, Electrolytic (All 25,26 & 27")	4835 124 47056
C553	1000uF., 25V, Electrolytic (All 13,19 & 20")	4835 124 47111
C553	2200uF., 35V, Electrolytic (All 25,26 & 27")	4835 124 47416
C554	10uF., 50V, Electrolytic	4835 124 47037
C555	.22uF., 100V, Polyester	4835 121 47038
C556	10nF., 25V, 20%, Tubular	4835 122 17026
C557	1uF., 50V, Electrolytic	4835 124 47045
C562	56nF., 100V, 5%, Electrolytic	4835 121 47082
C565	100uF., 10V, Electrolytic	4835 124 47127
C603	47uF., 16V, Electrolytic	4835 124 47073
C604	82pF., 50V, 5%, Ceramic	4835 122 47024
C605	220pF., 50V, 5%, Ceramic	4835 122 47025
C606	330pF., 50V, 10%, Ceramic	4835 122 47047
C608	10uF., 50V, Electrolytic	4835 124 47037
C609	18pF., 50V, 5%, Ceramic, Tubular	4835 122 47365
C610	33pF., 50V, 5%, Ceramic	4835 122 87366
C611	.01uF., 25V, 10%, Ceramic, Tubular	4835 122 17026
C613	.01uF., 50V, 10%, Ceramic	4835 122 47098
C614	22pF., 50V, 5%, Ceramic	4835 122 47017
C616	4.7uF., 50V, Electrolytic	4835 124 47072
C617	22uF., 16V, Electrolytic	4835 124 47128
C618	4.7uF., 50V, Electrolytic	4835 124 47072
C619	3.3uF., 50V, Electrolytic	4835 124 47052
C620	39pF., 50V, 5%, Ceramic	4835 122 47021
C621	22uF., 16V, Electrolytic	4835 124 47128
C622	.01uF., 50V, 10%, Ceramic	4835 122 47098
C633	180pF., 50V, 10%, Ceramic (All 13,19 & 20")	4835 122 47369
C633	180pF., 50V, 10%, Ceramic (All 27")	4835 122 47369
C633	270pF., 50V, 10%, Ceramic (All 25")	4835 122 47008
C633	270pF., 50V, 10%, Ceramic (All 26")	4835 122 47008
C634	180pF., 50V, 10%, Ceramic (All 13, 19 & 20")	4835 122 47369
C634	180pF., 50V, 10%, Ceramic (27" Only)	4835 122 47369
C634	270pF., 50V, 10%, Ceramic (25" Only)	4835 122 47008
C634	270pF., 50V, 10%, Ceramic (26" Only)	4835 122 47008
C635	180pF., 50V, 10%, Ceramic (All 13, 19 & 20")	4835 122 47369
C635	180pF., 50V, 10%, Ceramic (27" Only)	4835 122 47369
C635	270pF., 50V, 10%, Ceramic (25" Only)	4835 122 47008
C635	270pF., 50V, 10%, Ceramic (26" Only)	4835 122 47008
C636	100pF., 50V, 10%, Ceramic	4835 122 47045
C637	100pF., 50V, 10%, Ceramic	4835 122 47045
C638	100pF., 50V, 10%, Ceramic	4835 122 47045
C663	33nF., 400V, Metalized Polyester	4835 121 47035
C668	2.2uF., 50V, Electrolytic	4835 124 47049
C672	.01uF., 50V, 10%, Ceramic	4835 122 47098
C674	.01uF., 50V, 10%, Ceramic	4835 122 47098
C675	.01uF., 50V, 10%, Ceramic	4835 122 47098
C680	.22uF., 50V, Electrolytic	4835 124 47107
C682	.22uF., 50V, Electrolytic	4835 124 47107
C685	1000pF., 50V, 10%, Ceramic	4835 122 47004
C687	1uF., 50V, Electrolytic	4835 124 47045
RESISTORS		
RA2	Resistor Network, 1/8W 22K 5%	4835 111 97036
RA3	Resistor Network, 1/8W 22K 5%	4835 111 97035
R206	47k, Control Adj. (Y4)	4835 100 17017
R206	47k, Control Adj. (Y1)	4835 100 17042
R209	4.3k, 5%, 1/8W, Carbon Film	4835 116 57476
V211	0 ohm,1/8W, Carbon (No PIP)	4835 110 67096
R212	120 ohm, 5%, 1/8W, Carbon Film	4835 116 57489
R213	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R214	200 ohm, 5%, 1/4W, Carbon Film (PIP)	4835 116 57408
R214	680 ohm, 5%, 1/4W, Carbon Film (Non-PIP)	4835 116 57477
V214	0 ohm,1/8W, Carbon (No PIP)	4835 110 67096
R215	100 ohm, 5%, 1/8W, Carbon Film	4835 116 57318
R216	10 ohm, 5%, 1/4W, Carbon Film (No PIP)	4835 116 57362
R216	120 ohm, 5%, 1/4W, Carbon Film (PIP)	4835 116 57489

Y1/Y4 MAIN CHASSIS
REPLACEMENT PARTS LIST (continued)

Ref.	Description	Part Number
RESISTORS (continued)		
R217	0 ohm, 1/8W, Jumper, Carbon Film	4835 110 67173
R218	100 ohm, 5%, 1/8W, Carbon Film	4835 116 57318
R220	620 ohm, 5%, 1/8W, Carbon Film	4835 116 57502
R221	330 ohm, 5%, 1/8W, Carbon Film (Mono JP No SAP or PIP or Str. No PIP w/JP)	4835 116 57421
R224	10k, 5%, 1/8W, Carbon Film (Mono, Non SAP, PIP)	4835 116 57321
R224	1.5k, 5%, 1/8W, Carbon Film (Mono Jack Panel & No PIP & No SAP)	4835 116 57401
R225	100k, 5%, 1/8W, Carbon Film (Mono JP No SAP or PIP or Stereo No PIP w/JP)	4835 116 57395
R229	300k, 1/8 watt (DBX/SAP or Mono SAP or Lead Stereo)	4835 116 57495
R230	7.5k, 1/8W, 2%, Carbon Film (Mono, Non SAP)	4835 110 67094
⚠ R231	18 ohm, 5%, 3W, Metal Film (25",26",27" Mono, Non SAP)	4835 116 57042
⚠ R231	22 ohm, 3W, 5%, Metal Film (All 13,19 & 20" Mono)	4835 116 67072
⚠ R231	2.2 ohm, 3W, 5%, Metal Film (DBX/SAP or Mono SAP or Lead Stereo)	4835 116 67069
R232	4.7k, 5%, 1/8W, Carbon Film (Mono NonSAP)	4835 116 57427
R236	1.5k Baseband (Y4, DBX/SAP or Mono SAP or Lead Ster.)	4835 100 17043
R236	1.5k Level Adjust (Y1, DBX/SAP or Mono SAP or Lead Ster.)	4835 100 17053
R237	680 ohm, 5%, 1/8W, Carbon Film (DBX/SAP or Mono SAP or Lead Stereo)	4835 116 57477
R238	1.5k, 5%, 1/8W, Carbon Film (DBX/SAP or Mono SAP or Lead Stereo)	4835 116 57401
R239	1k, 5%, 1/8W, Carbon Film (DBX/SAP or Mono SAP or Lead Stereo)	4835 116 57319
R239	1.8k, 1/8W, 5%, Carbon Film (Lead Stereo Only)	4835 116 57406
R240	1k, 5%, 1/8W, Carbon Film (DBX/SAP or Mono SAP or Lead Stereo)	4835 116 57319
R240	560 ohm, 5%, 1/8W, Carbon Film (Lead Stereo Only)	4835 116 57326
R241	680k, 5%, 1/8W, Carbon Film	4835 116 57504
R243	1 Megohm, 5%, 1/8W, Carbon Film	4835 116 57322
R244	220 ohm, 5%, 1/8W, Carbon Film	4835 116 57324
R245	220 ohm, 5%, 1/8W, Carbon Film	4835 116 57324
R248	100 ohm, 5%, 1/8W, Carbon Film	4835 116 57318
R250	8.2k, 5%, 1/8W, Carbon Film	4835 116 57505
R251	47 ohm, 5%, 1/8W, Carbon Film	4835 116 57429
R255	16k, 5%, 1/8W, Carbon Film	4835 116 57492
R256	3.3k, 5%, 1/8W, Carbon Film	4835 116 57422
R257	180k, 5%, 1/8W, Carbon Film	4835 116 57407
R264	51k, 5%, 1/8W, Carbon Film	4835 116 57499
R272	120k, 5%, 1/8W, Carbon Film	4835 116 57398
R273	39k, 5%, 1/8W, Carbon Film	4835 116 57475
R274	82k, 5%, 1/8W, Carbon Film	4835 116 57506
R275	3.9 Megohm, 5%, 1/8W, Carbon Film	4835 110 67062
R301	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R302	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R303	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R304	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R305	10 ohm, 5%, 1/8W, Carbon Film	4835 116 57362
R308	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R309	10k, 5%, 1/8W, Carbon Film	4835 116 57321
R310	10k, 5%, 1/8W, Carbon Film (Stereo or DBX/SAP)	4835 116 57321
R311	330 ohm, 5%, 1/8W, Carbon Film	4835 116 57421
R312	330 ohm, 5%, 1/8W, Carbon Film	4835 116 57421
R314	0 ohm, 1/8W, Jumper, Carbon Film	4835 110 67173
R315	10k, 5%, 1/8W, Carbon Film (All Non Jack Panel)	4835 116 57321
R316	10k, 5%, 1/8W, Carbon Film (Mono, SAP or Non SAP)	4835 116 57321
R317	10k, 5%, 1/8W, Carbon Film (Everything but DBX/SAP or Mono SAP)	4835 116 57321
R318	330 ohm, 5%, 1/8W, Carbon Film	4835 116 57421
R319	4.7k, 5%, 1/8W, Carbon Film	4835 116 57427
R320	330 ohm, 5%, 1/8W, Carbon Film	4835 116 57421
R321	4.7k, 5%, 1/8W, Carbon Film	4835 116 57427
R322	820k, 5%, 1/8W, Carbon Film	4835 116 57507
R323	10k, 5%, 1/8W, Carbon Film	4835 116 57321
R324	10k, 5%, 1/8W, Carbon Film	4835 116 57321
R325	22k, 5%, 1/8W, Carbon Film	4835 116 57412
R326	100 ohm, 5%, 1/8W, Carbon Film (Stereo, or DBX/SAP)	4835 116 57318
R327	100 ohm, 5%, 1/8W, Carbon Film (Stereo, or DBX/SAP)	4835 116 57318
R330	4.7k, 5%, 1/8W, Carbon Film	4835 116 57427
R331	16k, 5%, 1/8W, Carbon Film (DBX/SAP or Mono SAP or Stereo)	4835 116 57492
R331	18k, 5%, 1/8W, Carbon Film (Mono, Non SAP)	4835 116 57323
R332	4.7k, 5%, 1/8W, Carbon Film (IC355 Closed Caption)	4835 116 57427
R333	15k, 5%, 1/8W, Carbon Film (IC355 Closed Caption)	4835 116 57402
R334	15k, 5%, 1/8W, Carbon Film (IC355 Closed Caption)	4835 116 57402
R335	10k, 5%, 1/8W, Carbon Film (IC355 Closed Caption)	4835 116 57321
R336	0 ohm, 1/8W, Jumper, Carbon Film (IC355 Closed Caption)	4835 110 67173
R337	33k	4835 116 57423
R338	10k, 5%, 1/8W, Carbon Film	4835 116 57321
R340	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R341	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R343	33k, 5%, 1/8W, Carbon Film	4835 116 57423
R345	22k, 5%, 1/8W, Carbon Film	4835 116 57412
R346	16k, 5%, 1/8W, Carbon Film (DBX/SAP or Mono SAP or Stereo)	4835 116 57492
R347	16k, 5%, 1/8W, Carbon Film (Mono, Non SAP)	4835 116 57492
R348	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R349	9.1k, 5%, 1/8W, Carbon Film (Mono NonSAP)	4835 110 67214
R355	15k, 5%, 1/8W, Carbon Film	4835 116 57402
R356	22k, 5%, 1/8W, Carbon Film (No Closed Caption)	4835 116 57412
R357	22k, 5%, 1/8W, Carbon Film (IC355 Closed Caption)	4835 116 57412
R358	100k, 1/8W, 5%, Carbon Film	4835 116 57395
⚠ R359	33 ohm, 5%, 1/3W, Metal Film	4835 116 57159
R360	15k, 5%, 1/2W, Metal Film	4835 116 57275
R361	15k, 5%, 1/2W, Metal Film	4835 116 57275
R362	0 ohm, 1/8W, Jumper, Carbon Film (IC355 Closed Caption)	4835 110 67173
R363	0 ohm, 1/8W, Jumper, Carbon Film (IC355 Closed Caption)	4835 110 67173
R364	0 ohm, 1/8W, Jumper, Carbon Film (IC355 Closed Caption)	4835 110 67173
R365	3.3k, 5%, 1/8W, Carbon Film (IC355 Closed Caption)	4835 116 57422
R366	22k, 5%, 1/8W, Carbon Film	4835 116 57412
R367	10k, 5%, 1/8W, Carbon Film	4835 116 57321
R368	30k, 5%, 1/8W, Carbon Film	4835 116 57494
R382	510 ohm, 5%, 1/8W, Carbon Film (Closed Cap.)	4835 116 57431
R383	1k, 5%, 1/8W, Carbon Film (Closed Cap.)	4835 116 57319
R390	0 ohm, 1/8W, Jumper, Carbon Film (Non Data Terminal)	4835 110 67173
R390	100 ohm, 5%, 1/8W, Carbon Film (Stereo, Lead or DBX/SAP)	4835 116 57318
R391	0 ohm, 1/8W, Jumper, Carbon Film (Non Data Terminal with Jack Panel)	4835 110 67173

Y1/Y4 MAIN CHASSIS
REPLACEMENT PARTS LIST (continued)

Ref.	Description	Part Number
RESISTORS (continued)		
R391	100 ohm, 5%, 1/8W, Carbon Film (Data Terminal)	4835 116 57318
R391	100 ohm, 5%, 1/8W, Carbon Film (Stereo, Lead or DBX/SAP)	4835 116 57318
R393	10k, 5%, 1/8W, Carbon Film (Non Data Terminal)	4835 116 57321
R395	100k, 5%, 1/8W, Carbon Film	4835 116 57395
R396	100k, 5%, 1/8W, Carbon Film	4835 116 57395
R400	Thermistor (13,19,20,25 & 26")	4835 116 47001
R400	Thermistor (27")	4835 116 57193
⚠ R401	4.7 Megohm, 5%, 1/2W, Metal Film	4835 116 57009
R402	27k, 1/2W, 5% Carbon Film	4835 110 47136
⚠ R403	1.5 ohm, 7W, 10%, Wire Wound	4835 112 47007
R404	1k, 1/4W, 5%, Carbon Film	4835 116 57319
R405	130k, 5%, 1/2W, Carbon Film	4835 110 47125
R406	47k, 5%, 1/2W, Carbon Film	4835 110 47042
R408	100 ohm, 5%, 1/8W, Carbon Film	4835 116 57318
R409	120k, 5%, 1/8W, Carbon Film	4835 116 57398
⚠ R411	100 ohm, 5%, 1/3W, Metal Film	4835 116 87002
R413	4.7K, 5%, 1/4W, Metal Film	4835 116 57427
R416	100 ohm, 5%, 1/8W, Carbon Film	4835 116 57318
R417	22 ohm, 1/8W, 5%, Carbon Film	4835 116 57372
R418	47k, 5%, 1/8W, Carbon Film	4835 116 57428
⚠ R419	1 ohm, 5%, 1/3W, Metal Film	4822 111 30483
⚠ R420	0.51 ohm, 1/2W, 5%, Metal Film	4835 116 67001
⚠ R421	1 ohm, 5%, 1/3W, Metal Film (Jack Panel)	4822 111 30483
R422	4.7k, 5%, 1/2W, Carbon Film	4835 110 47052
R423	4.7k, 5%, 1/2W, Carbon Film	4835 110 47052
R424	270k, 1/4 watt	4835 116 57417
R431	47 ohm, 5%, 1/2W, Carbon Film	4835 110 47041
R432	1k, 5%, 1/3W, Metal Film	4835 116 57108
R436	470K, 1/4w	4835 116 57498
R437	4.7 ohm, 5%, 1/2W, Carbon Film	4835 110 47023
R438	680k, 1/2W, 5%, Carbon Film	4835 110 47157
⚠ R445	1 ohm, 5%, 1/3W, Metal Film	4822 111 30483
⚠ R448	100 ohm, 5%, Wire Wound (All 13, 19 & 20")	4835 112 37019
⚠ R448	47 ohm, 5%, Wire Wound (All 25, 26 & 27")	4835 112 37021
R456	0 ohm, 1/8W, 5%, Carbon Film	4835 110 67173
⚠ R457	27 ohm, 1/8W, 5%, Carbon Film	4835 116 57472
⚠ R459	100 ohm, 2W, 5%, Metal Film	4835 116 57132
⚠ R460	2.2 ohm, 1/3W, 5%, Metal Film	4822 111 30492
R461	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R462	470 ohm, 5%, 1/8W, Carbon Film	4835 116 57426
R463	1.5k, 5%, 1/8W, Carbon Film	4835 116 57401
⚠ R464	68 ohm, 1W, 5%, Metal Film	4835 116 57279
⚠ R465	24 ohm, 1/8W, 5%, Carbon Film	4835 116 57493
⚠ R466	47 ohm, 5%, 1/3W, Metal Film (19,20, 25,26,27")	4835 116 57069
⚠ R467	20.0 ohm, 5%, 1/2W, Metal Film (PIP)	4835 116 67084
⚠ R468	1 ohm, 5%, 1/3W, Metal Film	4822 111 30483
⚠ R469	8.2 ohm, 1/W, 5%, Metal Film (Jack Panel)	4822 111 30506
⚠ R470	4.3 ohm, 5%, 1/8W, Carbon Film	4835 116 57497
⚠ R475	0.51 ohm, 1/2W, 5%, Metal Film	4835 116 67001
R491	1.8k, 5%, 1/4W, Carbon Film (All Jack Panel except 13" Ster w/JP)	4835 116 57406
R491	470 ohm, 5%, 1/4W, Carbon Film (13" Stereo w/Jack Panel)	4835 116 57426
R500	10k, 5%, 1/8W, Carbon Film (13" or 19", No PIP)	4835 116 57321
R500	5.1k, 5%, 1/8W, Carbon Film (19" PIP or 20",25",26",27")	4835 116 57432
R501	100 ohm, 5%, 1/8W, Carbon Film	4835 116 57318
R502	130 ohm, 1/2W, 5%, Carbon Film (All 13",19" & 20")	4835 110 47148
R502	300 ohm, 5%, 1/2W, Carbon Film (All 25,26 & 27")	4835 110 47066
R503	3.9k, 1/2W, 5%, Carbon Film	4835 110 47015
⚠ R504	16k, 2W, 5%, Metal Film (All 13,19 & 20")	4835 116 67087
⚠ R504	7.5k, 2W, 5%, Metal Film (All 25,26 & 27")	4835 116 57286
R505	39k, 5%, 1/8W, Carbon Film	4835 116 57475

Ref.	Description	Part Number
RESISTORS (continued)		
⚠ R506	18 ohm, 2W, 5%, Metal Film	4835 116 67017
⚠ R507	680 ohm, 1/2W, 5%, Carbon Film (19" with PIP or 20")	4835 110 57014
⚠ R507	1k, 5%, 2W, Metal Film (25"/26" Non Diode Mod. Models Only)	4835 116 57057
⚠ R507	1k, 5%, 2W, Metal Film (27" Non Diode Mod. Models Only)	4835 116 57057
R508	560 ohm, 5%, 1/8W, Carbon Film	4835 116 57326
R509	430 ohm, 14W, Metal Film	4835 116 57496
⚠ R510	39k, 5%, 1/4W, Carbon Film (Non Diode Modulator Models Only)	4835 116 57475
R511	300k, 5%, 1/2W, Metal Film	4835 116 57211
R512	300k, 5%, 1/2W, Metal Film	4835 116 57211
R513	100 ohm, 5%, 1/8W, Carbon Film	4835 116 57318
R514	330 ohm, 5%, 1/8W, Carbon Film	4835 116 57421
⚠ R515	20 ohm, 1/3W, 5%, Metal Film	4835 116 57065
R520	47k, Control Adj. (Y4)	4835 100 17017
R520	47k, Control Adj. (Y1)	4835 100 17042
R524	16k, 2W, 5%, Metal Film (All 13,19 & 20")	4835 116 67087
R524	7.5k, 2W, 5%, Metal Film (All 25,26 & 27")	4835 116 57286
⚠ R529	100k, 5%, 1/8W, Carbon Film	4835 116 57395
⚠ R529	3.9k, 5%, 1/8W, Carbon Film (Y4)	4835 116 57425
⚠ R530	1 ohm, 5%, 1/3W, Metal Film	4822 111 30483
⚠ R533	1.10k, 1%, 1/4W, Metal Film (All 25, 26 & 27")	4835 116 57482
⚠ R533	1.3k, 1/4W, 1% (19" Stereo or 20" Stereo)	4835 116 57483
⚠ R533	1 ohm, 1/3W, 5%, Metal Film (19" Mono or 20" Mono)	4835 111 30483
⚠ R533	5.76k, 1/4W, 1% (13" Stereo)	4835 116 57486
⚠ R533	7.68k, 1/4W, 1%, Metal Film (19" Mono or 20" Mono)	4835 116 57487
⚠ R533	8.66k, 1/4W, 1%, Metal Film (13" Mono)	4835 116 57285
⚠ R534	24k, 1/4W, 1%, Metal Film (13",19", & 20" Mono)	4835 116 57273
⚠ R534	24k, 1/4W, 1%, Metal Film (13",19", & 20" Stereo)	4835 116 57273
⚠ R534	5.6k, 1/4W, 1%, Metal Film (Y1)	4835 116 57485
⚠ R535	4.7k, 5%, 1/8W, Carbon Film (Y4)	4835 116 57427
⚠ R536	5.6k, 1/8W, 5%, Carbon Film (Y4)	4835 116 57434
R538	4.7k, 5%, 1/8W, Carbon Film	4835 116 57427
R539	300k, 5%, 1/8W, Carbon Film (13",19", & 20" Stereo)	4835 116 57495
R545	4.7k, Control Adj.	4835 100 17054
R550	3.9k, 5%, 1/8W, Carbon Film	4835 116 57425
R551	330 ohm, 5%, 1/8W, Carbon Film	4835 116 57421
R552	3.3 ohm, 5%, 1/8W, Carbon Film	4835 116 57385
R553	430 ohm, 1/2W, 5%, Carbon Film (25")	4835 110 47183
R553	430 ohm, 1/2W, 5%, Carbon Film (26")	4835 110 47183
R553	560 ohm, 1/2W, 5%, Carbon Film (19, 20")	4835 111 57002
R553	620 ohm, 1/2W, 5%, Carbon Film (13")	4835 110 47127
R553	750 ohm, 1/2W, 5%, Carbon Film (27")	4835 110 47129
R554	2.7k, 5%, 1/8W, Carbon Film (27")	4835 116 57415
R554	3.6k, 5%, 1/8W, Carbon Film (25")	4835 116 57474
R554	3.6k, 5%, 1/8W, Carbon Film (26")	4835 116 57474
R554	5.6k, 5%, 1/8W, Carbon Film (20")	4835 116 57434
R554	6.8k, 5%, 1/8W, Carbon Film (13")	4835 116 57327
R554	8.2k, 5%, 1/8W, Carbon Film (19")	4835 116 57505
R556	220 ohm, 5%, 1/8W, Carbon Film (27")	4835 116 57324
R556	390 ohm, 1/8W, 5%, Carbon Film (25")	4835 116 57424
R556	390 ohm, 1/8W, 5%, Carbon Film (26")	4835 116 57424
R556	430 ohm, 5%, 1/8W, Carbon Film (20")	4835 116 57496
R556	470 ohm, 5%, 1/8W, Carbon Film (13")	4835 116 57426
R556	470 ohm, 5%, 1/8W, Carbon Film (19")	4835 116 57426
R557	100k, 5%, 1/8W, Carbon Film (27")	4835 116 57395
R557	120k, 5%, 1/8W, Carbon Film (20")	4835 116 57398
R557	150k, 5%, 1/8W, Carbon Film (13")	4835 116 57465
R557	150k, 5%, 1/8W, Carbon Film (19")	4835 116 57465
R557	91k, 1/8W, 5%, Carbon (25")	4835 116 57509
R557	91k, 1/8W, 5%, Carbon (26")	4835 116 57509
R558	0 ohm, 1/8W, Jumper, Carbon Film (All 13,19 & 20")	4835 110 67173
R558	270 ohm, 5%, 1/8W, Carbon Film (27")	4835 116 57414

To order parts call the TOLL FREE Philips Sales Center number : 1-800-851-8885

Y1/Y4 MAIN CHASSIS
REPLACEMENT PARTS LIST (continued)

Ref.	Description	Part Number
RESISTORS (continued)		
R558	82 ohm (25")	4835 116 57364
R558	82 ohm (26")	4835 116 57364
R559	68k Vertical Size	4835 100 17052
R560	1 ohm, 5%, 1/2W, Metal Film (All 25,26 & 27")	4835 116 57109
R560	2 ohm, 1/2W, 5%, Metal Film (All 13,19 & 20")	4835 116 57276
R561	1.5k, 5%, 1/8W, Carbon Film (20")	4835 116 57401
R561	1.8k, 1/8W, 5%, Carbon Film (13")	4835 116 57406
R561	2k, 5%, 1/8W, Carbon Film (19")	4835 116 57409
R561	560 ohm, 5%, 1/8W, Carbon Film (27")	4835 116 57326
R561	910 ohm, 5%, 1/8W, Carbon Film (25")	4835 116 57508
R561	910 ohm, 5%, 1/8W, Carbon Film (26")	4835 116 57508
⚠ R562	680 ohm, 1W, 5%, Metal Film	4835 116 67144
R565	56k, 5%, 1/2W, Carbon Film	4835 110 47133
R566	820 ohm, 5%, 1/8W, Carbon Film	4835 116 57439
R567	62k, 1/8W, 5%, Carbon Film	4835 116 57503
R568	180k, 5%, 1/8W, Carbon Film (All 13,19 & 20")	4835 116 57407
R568	820k, 5%, 1/8W, Carbon Film (All 25,26 & 27")	4835 116 57507
R569	11k, 1/4W, 5%, Carbon Film (13")	4835 110 57327
R569	1.8k, 1/4W, 5%, Carbon Film (All 25,26 & 27")	4835 110 57328
R569	4.7k, 1/4w (All 19" & 20")	4835 110 57302
R603	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R604	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R605	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R606	2.7k, 5%, 1/8W, Carbon Film	4835 116 57415
R607	1.6k, 1/8W, 5%, Carbon Film	4835 116 57404
R608	120 ohm, 5%, 1/8W, Carbon Film	4835 116 57489
R609	2.7k, 5%, 1/8W, Carbon Film	4835 116 57415
R610	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R621	10k, 5%, 1/8W, Carbon Film	4835 116 57321
R622	12k, 5%, 1/8W, Carbon Film (13")	4835 116 57397
R622	20k, 5%, 1/8W, Carbon Film (19,20,25, 26,27")	4835 116 57468
R623	3.3k, 5%, 1/8W, Carbon Film	4835 116 57422
R624	3.3k, 5%, 1/8W, Carbon Film	4835 116 57422
R625	3.3k, 5%, 1/8W, Carbon Film	4835 116 57422
R630	150 ohm, 5%, 1/8W, Carbon Film	4835 116 57399
R631	150 ohm, 5%, 1/8W, Carbon Film	4835 116 57399
R632	150 ohm, 5%, 1/8W, Carbon Film	4835 116 57399
R633	100 ohm, 5%, 1/8W, Carbon Film	4835 116 57318
R634	100 ohm, 5%, 1/8W, Carbon Film	4835 116 57318
R635	100 ohm, 5%, 1/8W, Carbon Film	4835 116 57318
R636	330 ohm, 5%, 1/8W, Carbon Film	4835 116 57421
R637	330 ohm, 5%, 1/8W, Carbon Film	4835 116 57421
R638	330 ohm, 5%, 1/8W, Carbon Film	4835 116 57421
R642	2.2k, Blue Drive Control Adj.	4835 100 17021
R643	2.2k, Green Drive Control Adj.	4835 100 17021
R644	2.2k, Red Drive Control Adj.	4835 100 17021
R645	1 Megohm, 5%, 1/8W, Carbon Film	4835 116 57322
R647	1k, 5%, 1/8W, Carbon Film (PIP)	4835 116 57319
R648	4.7k, Blue Cutoff Control Adj.	4835 100 17022
R649	4.7k, Green Cutoff Control Adj.	4835 100 17022
R650	4.7k, Red Cutoff Control Adj.	4835 100 17022
R651	3.6k, 1/8W, Carbon Film (Y1)	4835 110 67213
R651	3.6k, 5%, 1/8W, Carbon Film (Y4)	4835 116 57474
R652	3.6k, 5%, 1/8W, Carbon Film	4835 116 57474
R653	3.6k, 5%, 1/8W, Carbon Film	4835 116 57474
R654	150 ohm, 5%, 1/8W, Carbon Film	4835 116 57399
R655	150 ohm, 5%, 1/8W, Carbon Film	4835 116 57399
R656	150 ohm, 5%, 1/8W, Carbon Film	4835 116 57399
R662	5.6k, 5%, 1/8W, Carbon Film	4835 116 57434
R663	510 ohm, 5%, 1/8W, Carbon Film	4835 116 57431
R669	22k, Brightness Adj. (Y4)	4835 100 17045
R669	22k Brightness Adj. (Y1)	4835 100 17038
R671	1k, 5%, 1/8W, Carbon Film	4835 116 57319
R672	10k, 5%, 1/8W, Carbon Film	4835 116 57321
R673	4.7k, 5%, 1/8W, Carbon Film	4835 116 57427
R674	470 ohm, 1/8W, 5%, Carbon Film	4835 116 57426
R675	10k, 5%, 1/8W, Carbon Film	4835 116 57321
R676	22k, 5%, 1/8W, Carbon Film	4835 116 57412
R678	51k, 1/8W, 5%, Carbon Film	4835 116 57499
R679	68k, 5%, 1/8W, Carbon Film	4835 116 57478
R680	130k, 1/8W, 5%, Carbon Film	4835 116 57491
R681	33k, 5%, 1/8W, Carbon Film	4835 116 57423
R682	39k, 5%, 1/8W, Carbon Film	4835 116 57475
R683	91k, 1/8W, 5%, Carbon	4835 116 57509
R687	3.9k, 5%, 1/8W, Carbon Film	4835 116 57425
INTEGRATED CIRCUITS		
IC230	IC, Audio Amplifier (Non SAP)	4835 209 47005
IC270	IC, Signal Processor	4835 209 88106
IC345	IC, Microprocessor with Internal IC345 CC)	4835 209 88107
IC345	IC, Microprocessor Non PIP Models (w/ or w/out IC355)	4835 209 88109
IC346	Memory IC	4835 209 88108
IC355	IC, Closed Caption Decoder	4835 209 88025
IC360	IC, Closed Caption	4835 209 87904
IC410	IC,	4835 209 47056
IC530	IC Shutdown (Y1)	4835 209 87838
IC550	IC, Vertical (All 25,26 & 27")	4835 209 87073
IC550	IC, Vertical (All 13,19 & 20")	4835 209 87069
TRANSISTORS		
Q210	Transistor, PNP, Video Buffer	4835 130 47126
Q221	Transistor, NPN, Audio Swap (Mono JP No SAP or PIP or Str. No PIP w/JP)	4835 130 47064
Q232	Transistor, NPN Baseband Buffer (DBX/SAP or Mono SAP or Lead Stereo)	4835 130 47064
Q273	Transistor, NPN, AFT Buffer	4835 130 47064
Q381	Transistor, NPN, CC Video Buffer	4835 130 47064
Q400	Transistor, 129V Source	4835 130 47072
Q402	Transistor, NPN, On/Off Switch	4835 130 47059
Q403	Transistor, NPN, 9V Standby Switch	4835 130 47892
Q404	Transistor, NPN, 9V Standby Sw. Protection	4835 130 47064
Q410	Transistor, NPN, 5V Standby Regulator	4835 130 47051
Q420	Transistor, NPN, Start-Up Sw.	4835 130 47059
Q461	Transistor, NPN, 5V Tuner Source	4835 130 47051
Q462	Transistor, NPN, 9V Source	4835 130 47059
Q463	Transistor, NPN, 5V Source	4835 130 47051
Q501	Transistor, Horiz. Driver	4835 130 47073
⚠ Q502	Transistor, Horiz. Output	4835 130 47897
Q510	Transistor, NPN, Flyback Pulse Buffer	4835 130 47064
Q530	Transistor, PNP, Shutdown (Y4)	4835 130 47126
Q560	Transistor, NPN, Low AC Tracking	4835 130 47064
Q565	Transistor, NPN, V Ramp Generator	4835 130 47064
Q602	Transistor, NPN, Luma Process	4835 130 47064
Q630	Transistor, NPN, Blue Amp	4835 130 47064
Q631	Transistor, NPN, Green Amp	4835 130 47064
Q632	Transistor, NPN, Red Amp	4835 130 47064
Q661	Transistor, PNP, Beam Limiter	4835 130 47126
DIODES		
D210	Diode, Silicon (PIP)	4835 130 37048
D211	Diode, Silicon (PIP)	4835 130 37048
D220	Diode, Silicon (Mono Jack Panel & NonSAP)	4835 130 37048
D274	Diode, Silicon	4835 130 37048
D341	Diode, Silicon	4835 130 37048
D345	Diode, Silicon	4835 130 37048
D346	Diode, Silicon	4835 130 37048
D352	Diode, Silicon	4835 130 37048
D365	Diode, Silicon (IC355 Closed Caption)	4835 130 37048
D401	Diode, Silicon (All 13,19 & 20")	4822 130 41275
D401	Diode, Fast, Soft Recovery (All 25,26 & 27")	4835 130 37059
D402	Diode, Silicon (All 13,19 & 20")	4822 130 41275
D402	Diode, Fast, Soft Recovery (All 25,26 & 27")	4835 130 37059

Y1/Y4 MAIN CHASSIS
REPLACEMENT PARTS LIST (continued)

Ref.	Description	Part Number
DIODES (continued)		
D403	Diode, Silicon (All 13,19 & 20")	4822 130 41275
D403	Diode, Fast, Soft Recovery (All 25,26 & 27")	4835 130 37059
D404	Diode, Silicon (All 13,19 & 20")	4822 130 41275
D404	Diode, Fast, Soft Recovery (All 25,26 & 27")	4835 130 37059
D405	Diode, Fast, Soft Recovery	4835 130 37094
D406	Diode, Silicon	4835 130 37048
D408	Buss Wire	---- --- -----
D409	Diode, Fast, Soft Recovery	4835 130 37094
V410	Diode, Silicon	4822 130 41275
V411	Diode, Silicon	4822 130 41275
D413	Diode, Silicon	4835 130 37048
D415	Diode, Silicon	4835 130 37048
D416	Diode, Silicon	4835 130 37048
D421	Diode, Silicon	4835 130 37048
D445	Diode, Silicon (Y1)	4835 130 37052
D445	Diode, Fast, Soft Recovery (All 13,19 & 20")	4835 130 37094
D460	Diode, Fast, Soft Recovery	4835 130 37094
D475	Diode, Silicon	4835 130 37052
D491	LED, (Internal Keyboard w/Jack Panel)	4835 130 87001
D508	Diode, Silicon	4835 130 37048
D510	Diode, Silicon (Non Diode Modulator Models Only)	4835 130 37052
⚠ D530	Diode, Silicon	4835 130 37048
D550	Diode, Fast, Soft Recovery	4835 130 37094
D567	Diode, Silicon	4835 130 37048
D629	Diode, Silicon	4835 130 37048
D630	Diode, Silicon	4835 130 37058
D661	Diode, Silicon	4835 130 37053
Z361	Zener, 33V	4835 130 37502
Z402	Zener, 33V	4835 130 37003
Z405	Zener, 16V	4835 130 37501
Z406	Zener Diode, 6.2V	4835 130 37121
Z461	Zener Diode, 5.6V	4835 130 37068
Z462	Zener, 10V	4835 130 37203
Z463	Zener Diode, 6.2V	4835 130 37121
Z529	Zener, 7.5V (Y4)	4835 130 37016
⚠ Z530	Zener Diode, 6.2V (Y4)	4835 130 37121
Z561	Zener, 7.5V	4835 130 37016
TRANSFORMERS & COILS		
⚠ T501	Flyback Transformer (13" Stereo)	4835 140 67095
⚠ T501	Flyback Transformer (19" Stereo or 20" Stereo)	4835 140 67096
⚠ T501	Flyback Transformer (25")	4835 140 67097
⚠ T501	Flyback Transformer (27")	4835 140 67097
⚠ T501	Flyback Transformer (13")	4835 140 67098
⚠ T501	Flyback Transformer (19" Mono or 20" Mono)	4835 140 67099
T504	Horizontal Driver	4835 142 47021
L209	Adjustable LC Coil, 4.5MHz.	4835 157 57113
L210	Adjustable LC Coil, 45.75MHz.	4835 157 57485
L211	Peaking Coil, 2.2uH., 5%	4835 157 67005
L212	Peaking Coil, 4.7uH., 5%	4835 157 57059
L215	Peaking Coil, 3.9uH., 5%	4835 157 67007
L221	Adjustable LC Coil, 4.5MHz.	4835 157 57113
L270	Adjustable LC Coil, 45.8MHz.	4835 157 57608
L315	Peaking Coil, 2.7uH., 5%	4835 157 67006
L322	Peaking Coil, 2.7uH., 5%	4835 157 67006
L340	Peaking Coil, 100uH., 5%	4835 157 57141
L341	Peaking Coil, 2.7uH., 5%	4835 157 67006
L348	Peaking Coil, 2.7uH., 5%	4835 157 67006
L351	Peaking Coil, 2.7uH., 5%	4835 157 67006
L352	Peaking Coil, 2.7uH., 5%	4835 157 67006
L353	Peaking Coil, 2.7uH., 5%	4835 157 67006
L358	Bead on staple (IC355 Closed Caption)	4835 526 17003
L361	Peaking Coil, 1.5uH., 5% (IC355 Closed Caption)	4835 157 57819
L362	Peaking Coil, 2.7uH., 5% (IC355 Closed Caption)	4835 157 67006
L363	Peaking Coil, 2.7uH., 5% (IC355 Closed Caption)	4835 157 67006
L364	Peaking Coil, 2.7uH., 5% (IC355 Closed Caption)	4835 157 67006
L365	Peaking Coil, 2.7uH., 5% (IC355 Closed Caption)	4835 157 67006
L382	Peaking Coil, 68uH., 5% (Closed Cap.)	4835 157 57821
⚠ L400	Choke Line (PIP or 25"/26"/27" Can.)	4835 157 57077
L417	Peaking Coil, 2.7uH., 5%	4835 157 67006
L418	Peaking Coil, 2.7uH., 5%	4835 157 67006
L502	Coil, Suppression	4835 152 27047
⚠ L507	Linearity Coil (25"/26" Non Diode Mod. Models Only)	4835 150 57002
⚠ L507	Linearity Coil (19" with PIP or 20")	4835 150 57001
⚠ L507	Linearity Coil (27" Coma Free & Diode Mod.)	4835 150 57034
⚠ L507	Linearity Coil (27" Coma Free & Non Diode Mod.)	4835 150 57034
L604	Peaking Coil, 27uH., 5%	4835 157 67019
L605	Peaking Coil, 22uH., 5%	4835 157 67018
L606	Peaking Coil, 33uH., 5%	4835 157 67025
L614	Peaking Coil, 15uH., 5%	4835 157 57057
L615	Peaking Coil, 47uH., 5%	4835 150 57045
L630	Peaking Coil, .47uH., 10%	4835 157 67002
MISCELLANEOUS		
Y200	Filter SAW Video	4835 153 97022
Y220	Ceramic Filter 4.5MHz.(DBX/SAP or Mono SAP)(Y4)	4835 153 57004
Y220	Ceramic Filter, 4.5MHz. (Y4) (Everything but DBX/SAP or Mono SAP)	4835 158 97009
Y220	Ceramic Filter, 4.5MHz. (DBX/SAP or Mono SAP) (Y1)	4835 153 57004
Y220	Ceramic Filter, 4.5MHz. (Y1) (Everything but DBX/SAP or Mono SAP)	4835 157 57341
Y250	Ceramic Resonator, 503.5KHz.	4835 157 57145
Y320	Ceramic Resonator, 4MHz. (Y4) (Standard Models w/or w/out IC355)	4835 157 57822
Y320	Ceramic Resonator, 8MHz. (Y4) (8 MHz Micro w/ or w/out any Closed Caption)	4835 157 57823
Y320	Ceramic Resonator, 4MHz. (Y1) (Standard Models w/ or w/out IC355)	4835 157 57822
Y320	Ceramic Resonator, 8MHz. (Y1) (8 MHz Micro w/ or w/out any Closed Caption)	4835 157 57823
Y603	Coil, LC Trap, 3.58MHz.	4835 154 97025
Y620	Crystal, 3.58MHz. (Y4)	4835 242 77022
Y620	Crystal, 3.58MHz. (Y1)	4835 242 77179
IR90	IR Receiver (External Keyboard)	4835 210 27002
IR91	IR Receiver (Internal Keyboard)	4835 210 27003
SW70	Switch Key (External Keyboard)	4835 277 27066
SW71	Switch Key (External Keyboard)	4835 277 27066
SW73	Switch Key (External Keyboard)	4835 277 27066
SW75	Switch Key (External Keyboard)	4835 277 27066
SW76	Switch Key (External Keyboard)	4835 277 27066
SW77	Switch Key (External Keyboard)	4835 277 27066
SW78	Switch Key (External Keyboard)	4835 277 27066
K400	Power Relay, 24V (19,20,25,26 & 27")	4835 277 27016
⚠ F400	Fuse, 4 Amp	4835 253 97095
⚠ F401	Fuse, 2.5 Amp	4835 253 97031
N401	Neon Bulb	4835 134 27001
T300	Tuner, UV936 (Y1)	4835 210 47055
T300	Tuner, UV936 (Y4)	4835 210 47058
S70	Switch KEY 6MM (External Keyboard)	4835 276 57003
S71	Switch KEY 6MM (External Keyboard)	4835 276 57003
S73	Switch KEY 6MM (External Keyboard)	4835 276 57003
S75	Switch KEY 6MM (External Keyboard)	4835 276 57003
S76	Switch KEY 6MM (External Keyboard)	4835 276 57003
S77	Switch KEY 6MM (External Keyboard)	4835 276 57003
S78	Switch KEY 6MM (External Keyboard)	4835 276 57003
S79	Switch KEY 6MM (Internal Keyboard)	4835 276 57004
D91	LED (External Keyboard w/Jack Panel)	4835 130 37516

Y1/Y4 MAIN CHASSIS
REPLACEMENT PARTS LIST (continued)

Ref.	Description	Part Number
NOT NORMALLY STOCKED ITEMS		
J3	3 Pin Header (All 13,19 & 20")	0018 222 20203
J4	2 Pin Header (Jack Panel)	0018 169 30002
J7	2 Pin Board Connector (Mono NonSAP)	0018 165 60002
J8	3 Pin Header (Mono Jack Panel & No PIP & No SAP)	0018 169 30003
J8	6 Pin Header (DataTerm. or Hospital)	0018 169 30006
J8	6 Pin Header (Str or Mono SAP)	0018 169 30006
J13	2 Pin Header (All 13,19 & 20")	0018 222 20002
J21	5 Pin Header (All 13,19 & 20")	0018 169 30005
J22	3 Pin Header (All 13,19 & 20")	0018 169 30304
J25	2 Pin Header (All 25,26 & 27")	0018 222 20002
J40	7 Pin Board Connector (Jack Panel)	0018 165 60007
J51	5 Pin Header (All 25,26 & 27")	0018 169 30005
J52	3 Pin Header (All 25,26 & 27")	0018 169 30304
J53	3 Pin Header (All 25,26 & 27")	0018 222 20203
NOT NORMALLY STOCKED ITEMS (continued)		
J75	5 Pin Header (External Keyboard)	0018 169 30005
J81	2 Pin Header (Auto Volume Limiter)	0018 169 30002
J94	4 Pin Header (External Keyboard)	0018 169 30004
J250	4 Pin Header (DBX/SAP or Mono SAP or Stereo)	0018 169 30004
J300	5 Pin Header (External Keyboard)	0018 169 30005
J303	4 Pin Header (External Keyboard)	0018 169 30004
J380	4 Pin Header (Remote Locator)	0018 169 30004
J560	3 Pin Header (Diode Modulator Models Only)	0018 169 30003
J603	2 Pin Header	0018 169 30204
J625	2 Pin Header (13,19,20" Str. or any 25,26,27")	0018 222 20002
J650	5 Pin Header	0018 169 30005

00APT110 & 00APT111 CRT SOCKET MODULE REPLACEMENT PARTS LIST

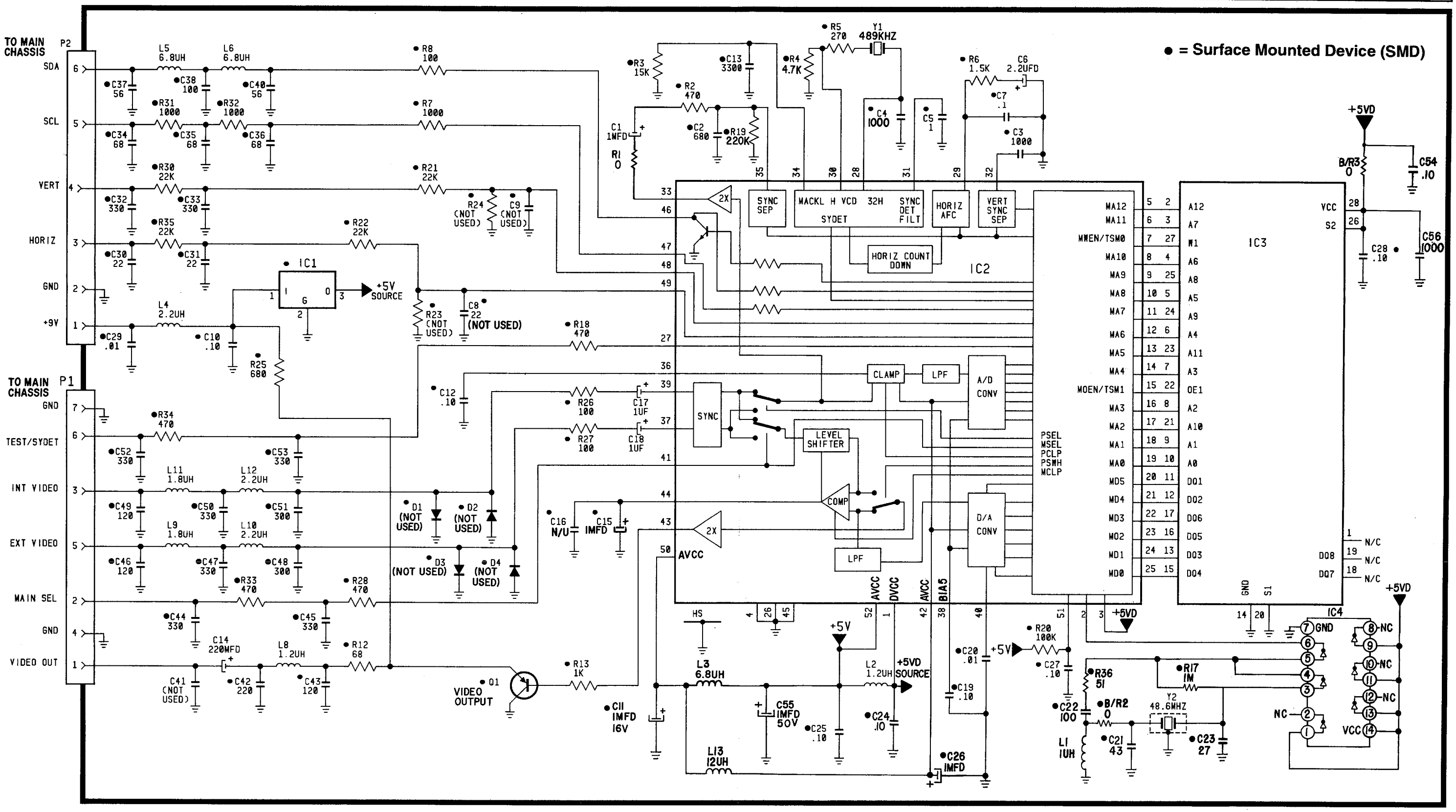
Ref.	Description	Part Number
CAPACITORS		
C1	820pF., 500V, 10%, Ceramic (13,19,& 20")	4835 122 47213
⚠ C2	10nF., 630V, Metalized Polyester (13,19, & 20")	4835 121 47335
C21	1000pF., 500V, 10%, Ceramic (25,26, & 27")	4835 122 37027
⚠ C22	10nF., 1kV, Ceramic (25,26, & 27")	4835 122 57002
C23	22nF., 400V, Metalized Polyester (25,26, & 27")	4835 121 47201
C24	100pF., 500V, 10%, Ceramic (25,26,& 27")	4835 122 47028
C28	1000uF., 25V, Electrolytic (25,26,& 27")	4835 124 47007
RESISTORS		
⚠ R1	2.4 ohm, 5%, 1/2W, Metal Film (13" Mono)	4835 116 57488
⚠ R1	2.7 ohm, 5%, 1/2W, Metal Film (19" Mono or 20" Mono)	4835 116 57051
⚠ R1	0.30 ohms (19" Stereo or 20" Stereo)	4835 116 57113
⚠ R1	0.43 ohm, 1/2W, 5%, Metal Film (13" Stereo)	4835 116 67085
⚠ R3	2.4 ohm, 5%, 1/2W, Metal Film (13" Mono)	4835 116 57488
⚠ R3	2.7 ohm, 5%, 1/2W, Metal Film (19" Mono or 20" Mono)	4835 116 57051
⚠ R3	0.30 ohms (19" Stereo or 20" Stereo)	4835 116 57113
⚠ R3	0.43 ohm, 1/2W, 5%, Metal Film (13" Stereo)	4835 116 67085
R4	1.5k, 1/2W, 5%, Carbon Film (All 13,19 & 20")	4835 110 47034
R5	1.5k, 1/2W, 20%, Carbon Film (All 13,19 & 20")	4835 110 47034
R6	100 ohm, 5%, 1/4W, Carbon Film (All 13, 19 & 20")	4835 116 57318
R7	51 ohm, 5%, 1/4W, Carbon Film (All 13, 19 & 20")	4835 116 57501
R8	51 ohm, 5%, 1/4W, Carbon Film (All 13, 19 & 20")	4835 116 57501
R9	51 ohm, 5%, 1/4W, Carbon Film (All 13,19 & 20")	4835 116 57501
⚠ R10	15k, 5%, 3W, Metal Film (All 13,19 & 20")	4835 116 67018
⚠ R11	15k, 5%, 3W, Metal Film (All 13,19 & 20")	4835 116 67018
⚠ R12	15k, 5%, 3W, Metal Film (All 13,19 & 20")	4835 116 67018
R13	1.5k, 1/2W, 20%, Carbon Film (All 13,19 & 20")	4835 110 47034
R14	1.5k, 20%, 1/2W, Carbon Film (All 13,19 & 20")	4835 110 47034
R15	1.5k, 20%, 1/2W, Carbon Film (All 13,19 & 20")	4835 110 47034
RESISTORS (continued)		
⚠ R22	100 (All 25,26 & 27")	4835 116 67089
⚠ R23	0.33 ohm, 1/2W, 5%, Metal Film (25")	4835 116 57114
⚠ R23	0.33 ohm, 1/2W, 5%, Metal Film (26")	4835 116 57114
⚠ R23	0.33 ohm, 1/2W, 5%, Metal Film (27")	4835 116 57114
R24	1.5k, 20%, 1/2W, Carbon Film (All 25, 26 & 27")	4835 110 47034
R25	1.5k, 20%, 1/2W, Carbon Film (All 25, 26 & 27")	4835 110 47034
⚠ R26	100 ohm, 5%, 1/3W, Metal Film (All 25, 26 & 27")	4835 116 87002
R27	51 ohm, 5%, 1/4W, Carbon Film (All 25, 26 & 27")	4835 116 57501
R28	51 ohm, 5%, 1/4W, Carbon Film (All 25, 26 & 27")	4835 116 57501
R29	51 ohm, 5%, 1/4W, Carbon Film (All 25, 26 & 27")	4835 116 57501
⚠ R50	15k, 5%, 3W, Metal Film (All 25,26 & 27")	4835 116 67018
⚠ R51	15k, 5%, 3W, Metal Film (All 25,26 & 27")	4835 116 67018
⚠ R52	15k, 5%, 3W, Metal Film (All 25,26 & 27")	4835 116 67018
R53	1.5k, 20%, 1/2W, Carbon Film (All 25,26 & 27")	4835 110 47034
R54	1.5k, 20%, 1/2W, Carbon Film (All 25,26 & 27")	4835 110 47034
R55	1.5k, 20%, 1/2W, Carbon Film (All 25,26 & 27")	4835 110 47034
TRANSISTORS		
Q1	Transistor, Red Driver (All 13,19 & 20")	4835 130 47059
Q2	Transistor, Green Driver (All 13,19 & 20")	4835 130 47059
Q3	Transistor, Blue Driver (All 13,19 & 20")	4835 130 47059
Q21	Transistor, Red Driver (All 25,26 & 27")	4835 130 47059
Q22	Transistor, Green Driver (All 25,26 & 27")	4835 130 47059
Q23	Transistor, Blue Driver (All 25,26 & 27")	4835 130 47059
COILS		
L1	Peaking Coil, 100uH., 5% (All 13,19 & 20")	4835 157 57141
L21	Peaking Coil, 100uH., 5% (All 25,26 & 27")	4835 157 57141
MISCELLANEOUS		
⚠ CRT1	CRT, Mini-Neck (All 13,19 & 20")	4835 265 97331
⚠ CRT21	CRT, Standard Neck (All 25,26 & 27")	4835 265 97332

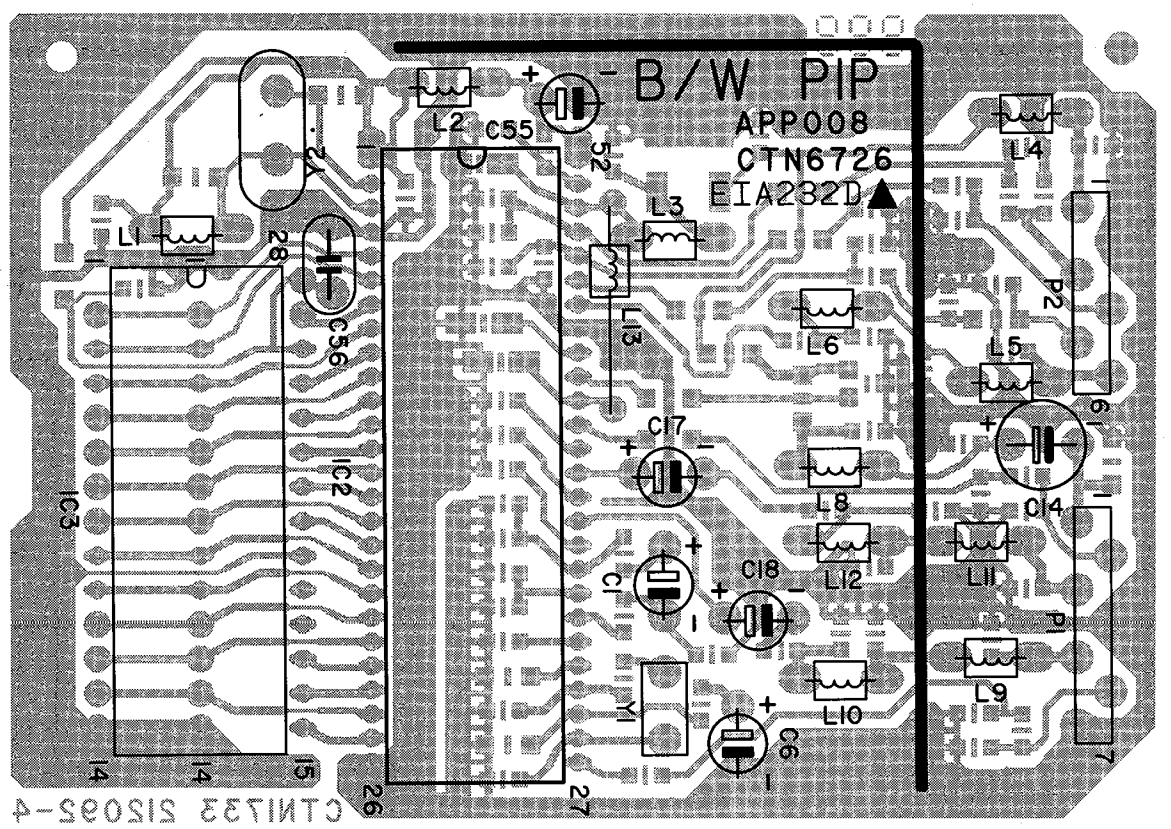
SERVICE NOTES

00APP008 C024 PIP MODULE SCHEMATIC DIAGRAM

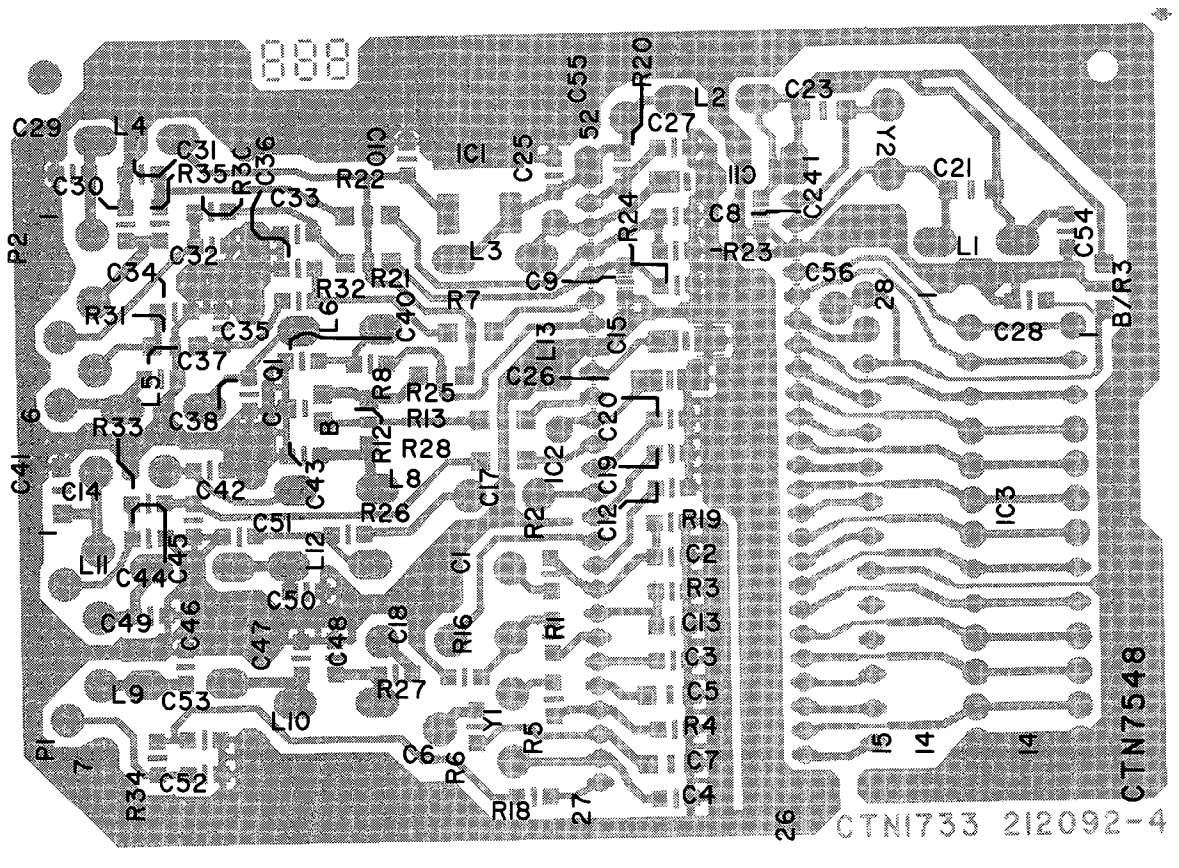
INTERCONNECT CHART
Main Chassis Schematic - Pg. 20/Frame (G8)

● = Surface Mounted Device (SMD)





COMPONENT SIDE



COPPER SIDE

To order parts call the TOLL FREE Philips Sales Center number : 1-800-851-8885

00APP008 C024 B&W MODULE REPLACEMENT PARTS LIST

Ref.	Description	Part Number
APP008 C024	B&W PIP Module	4835 219 57347
CAPACITORS		
C1	1uF., 50V, Electrolytic 20%	4835 124 47115
C2	680pF., 50V, 5%, Ceramic	• 4835 122 87019
C3	1nF., 5%, 50V, Ceramic	• 4835 122 87369
C4	1nF., 5%, 50V, Ceramic	• 4835 122 87369
C5	.1uF., 50V, 20%, Ceramic	• 4835 122 87044
C6	2.2uF., 50V, Electrolytic 20%	4835 124 47117
C7	.1uF., 50V, 20%, Ceramic	• 4835 122 87044
C8	22pF., 50V, 5%, Ceramic	• 4835 122 87286
C10	100nF., 50V, Ceramic	• 4835 122 87375
C11	1uF., 16V, Electrolytic	• 4835 124 97026
C12	100nF., 50V, Ceramic	• 4835 122 87375
C13	3300pF., 50V, 10%, Ceramic	• 4835 122 87294
C14	220uF., 4V, Electrolytic	4835 124 47417
C15	1uF., 16V, Electrolytic	• 4835 124 97026
C17	1uF., 50V, Electrolytic 20%	4835 124 47115
C18	1uF., 50V, Electrolytic 20%	4835 124 47115
C19	100nF., 50V, Ceramic	• 4835 122 87375
C20	.01uF., 50V, 10%, Ceramic	• 4835 122 87024
C21	43pF., 5%, 50V, Ceramic	• 4835 122 87387
C22	100pF., 50V, 5%, Ceramic	• 4835 122 87012
C23	27pF., 50V, 5%, Ceramic	• 4835 122 87029
C24	100nF., 50V, Ceramic	• 4835 122 87375
C25	100nF., 50V, Ceramic	• 4835 122 87375
C26	1uF., 16V, Electrolytic	• 4835 124 97026
C27	100nF., 50V, Ceramic	• 4835 122 87375
C28	100nF., 50V, Ceramic	• 4835 122 87375
C29	.01uF., 50V, 10%, Ceramic	• 4835 122 87024
C30	22pF., 50V, 5%, Ceramic	• 4835 122 87286
C31	22pF., 50V, 5%, Ceramic	• 4835 122 87286
C32	330pF., 50V, 5%, Ceramic	• 4835 122 87287
C33	330pF., 50V, 5%, Ceramic	• 4835 122 87287
C34	68pF., 50V, 5%, Ceramic	• 4835 122 87374
C35	68pF., 50V, 5%, Ceramic	• 4835 122 87374
C36	68pF., 50V, 5%, Ceramic	• 4835 122 87374
C37	56pF., 50V, 5%, Ceramic	• 4835 122 87373
C38	100pF., 50V, 5%, Ceramic	• 4835 122 87012
C40	56pF., 50V, 5%, Ceramic	• 4835 122 87373
C42	220pF., 50V, 5%, Ceramic	• 4835 122 87376
C43	120pF., 50V, 5%, Ceramic	• 4835 122 87371
C44	330pF., 50V, 5%, Ceramic	• 4835 122 87287
C45	330pF., 50V, 5%, Ceramic	• 4835 122 87287
C46	120pF., 50V, 5%, Ceramic	• 4835 122 87371
C47	330pF., 50V, 5%, Ceramic	• 4835 122 87287
C48	300pF., 50V, 5%, Ceramic	• 4835 122 87372
C49	120pF., 50V, 5%, Ceramic	• 4835 122 87371
C50	330pF., 50V, 5%, Ceramic	• 4835 122 87287
C51	300pF., 50V, 5%, Ceramic	• 4835 122 87372
C52	330pF., 50V, 5%, Ceramic	• 4835 122 87287
C53	330pF., 50V, 5%, Ceramic	• 4835 122 87287
C54	100nF., 50V, Ceramic	• 4835 122 87375
C55	1uF., 50V, Electrolytic 20%	4835 124 47115
C56	1000pF., 500V, 10%, Ceramic	4835 122 47384
RESISTORS		
BR2	0 ohm, "Chip" Jumper	• 4835 111 37019
BR3	0 ohm, "Chip" Jumper	• 4835 111 37019

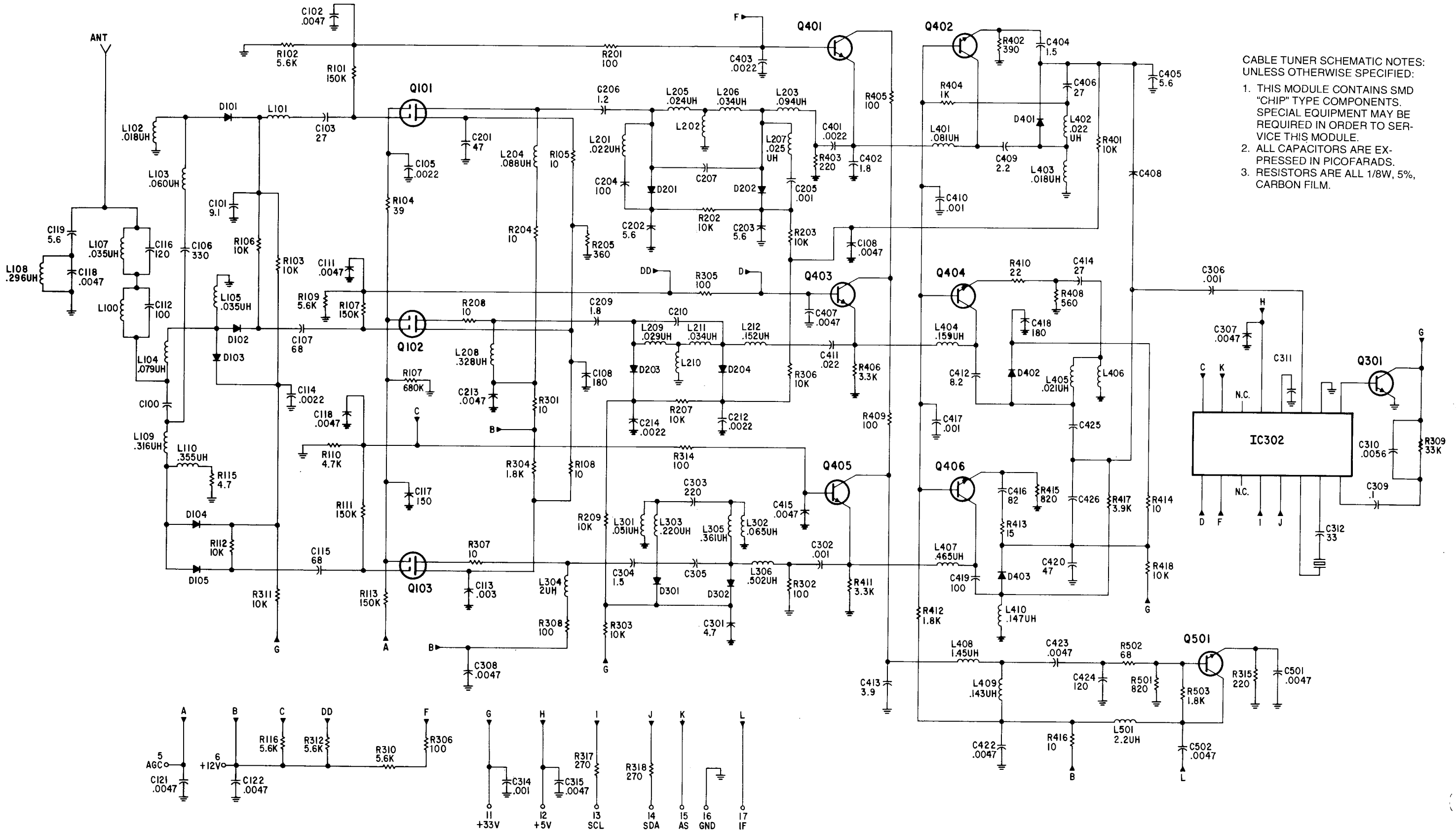
Ref.	Description	Part Number
RESISTORS (continued)		
R1	0 ohm, "Chip" Jumper	• 4835 111 37215
R2	470 ohm, 5%, 1/10W, Metal Film	• 4835 111 37259
R3	15k, 5%, 1/10W, Metal Film	• 4835 111 37006
R4	4.7k, 5%, 1/10W, Metal Film	• 4835 111 37015
R5	270 ohm, 5%, 1/10W, Metal Film	• 4835 111 37011
R6	1.5k, 5%, 1/10W, Metal Film	• 4835 111 37005
R7	1k, 5%, 1/4W, Metal Film	• 4835 111 37022
R8	100 ohm, 5%, 1/10W, Metal Film	• 4835 111 37001
R12	68 ohm, 5%, 1/4W, Metal Film	• 4835 111 37149
R13	1k, 5%, 1/4W, Metal Film	• 4835 111 37022
R17	1 Megohm, 5%, 1/4W, Metal Film	• 4835 111 37047
R18	470 ohm, 5%, 1/10W, Metal Film	• 4835 111 37259
R19	220k, 5%, 1/10W, Metal Film	• 4835 111 37235
R20	100k, 5%, 1/10W, Metal Film	• 4835 111 37003
R21	22k, 5%, 1/4W, Metal Film	• 4835 111 37031
R22	22k, 5%, 1/4W, Metal Film	• 4835 111 37031
R25	680 ohm, 5%, 1/4W, Metal Film	• 4835 111 37116
R26	100 ohm, 5%, 1/10W, Metal Film	• 4835 111 37001
R27	100 ohm, 5%, 1/10W, Metal Film	• 4835 111 37001
R28	470 ohm, 5%, 1/4W, Metal Film	• 4835 111 37104
R30	22k, 5%, 1/10W, Metal Film	• 4835 111 37009
R31	1k, 5%, 1/4W, Metal Film	• 4835 111 37022
R32	1k, 5%, 1/10W, Metal Film	• 4835 111 37002
R33	470 ohm, 5%, 1/10W, Metal Film	• 4835 111 37259
R34	470 ohm, 5%, 1/10W, Metal Film	• 4835 111 37259
R35	22k, 5%, 1/10W, Metal Film	• 4835 111 37009
R36	51 ohm, 5%, 1/4W, Metal Film	• 4835 111 37138
SEMICONDUCTORS		
IC1	IC, Regulator	• 4835 209 87807
IC2	IC,	4835 209 17339
IC3	IC,	4835 209 87531
IC4	IC,	4835 209 17355
Q1	Transistor, PNP	• 4835 130 47065
COILS		
L1	Peaking Coil 1.0uH. 5%	4835 157 67015
L2	Peaking Coil 1.2uH.	4835 157 67016
L3	Peaking Coil 6.8uH.	4835 157 67022
L4	Peaking Coil 2.2uH.	4835 157 67024
L5	Peaking Coil 6.8uH.	4835 157 67022
L6	Peaking Coil 6.8uH.	4835 157 67022
L8	Peaking Coil 1.2uH.	4835 157 67016
L9	Peaking Coil 1.8uH.	4835 157 67017
L10	Peaking Coil 2.2uH.	4835 157 67024
L11	Peaking Coil 1.8uH.	4835 157 67017
L12	Peaking Coil 2.2uH.	4835 157 67024
L13	Peaking Coil, 12uH. 10%	4835 157 57056
MISCELLANEOUS		
Y1	Ceramic Resonator 489kHz.	4835 153 97003
Y2	Crystal, Piezoelectric	4835 242 77149
THE FOLLOWING PARTS ARE NOT NORMALLY STOCKED		
P1	7 Pin Board Connector	0018 179 40007
P2	7 Pin Board Connector	0018 179 40006
	Shield B-W PIP	0073 563 70003
	Heatsink, B-W PIP	0073 563 80002

00340313 CABLE TUNER SCHEMATIC DIAGRAM
(FOR REFERENCE ONLY)
Frame D9

INTERCONNECT CHART
Main Chassis Schematic - Pg. 20/Frame (G8)

CABLE TUNER SCHEMATIC NOTES:
UNLESS OTHERWISE SPECIFIED:

1. THIS MODULE CONTAINS SMD "CHIP" TYPE COMPONENTS. SPECIAL EQUIPMENT MAY BE REQUIRED IN ORDER TO SERVICE THIS MODULE.
2. ALL CAPACITORS ARE EXPRESSED IN PICOFARADS.
3. RESISTORS ARE ALL 1/8W, 5%, CARBON FILM.



SLEEP TIMER

QUICK USE GUIDE (T213AG)

Have you ever fallen asleep in front of the TV only to have it wake you up at two in the morning with a test pattern screeching in your ears? Well, your TV can save you all that trouble by automatically turning itself off.

BEGIN

1. **Press the SLEEP button** on the remote (or DISPLAY button on the TV). SET SLEEP TIMER 0 MINUTES will appear on the screen.

2. **Press the SLEEP button** repeatedly to pick the amount of time (15 minutes to 2 hours ahead) before the TV will turn itself off.

   If you pass up the time interval you want, just keep pressing the SLEEP button and your time setting will come around again.

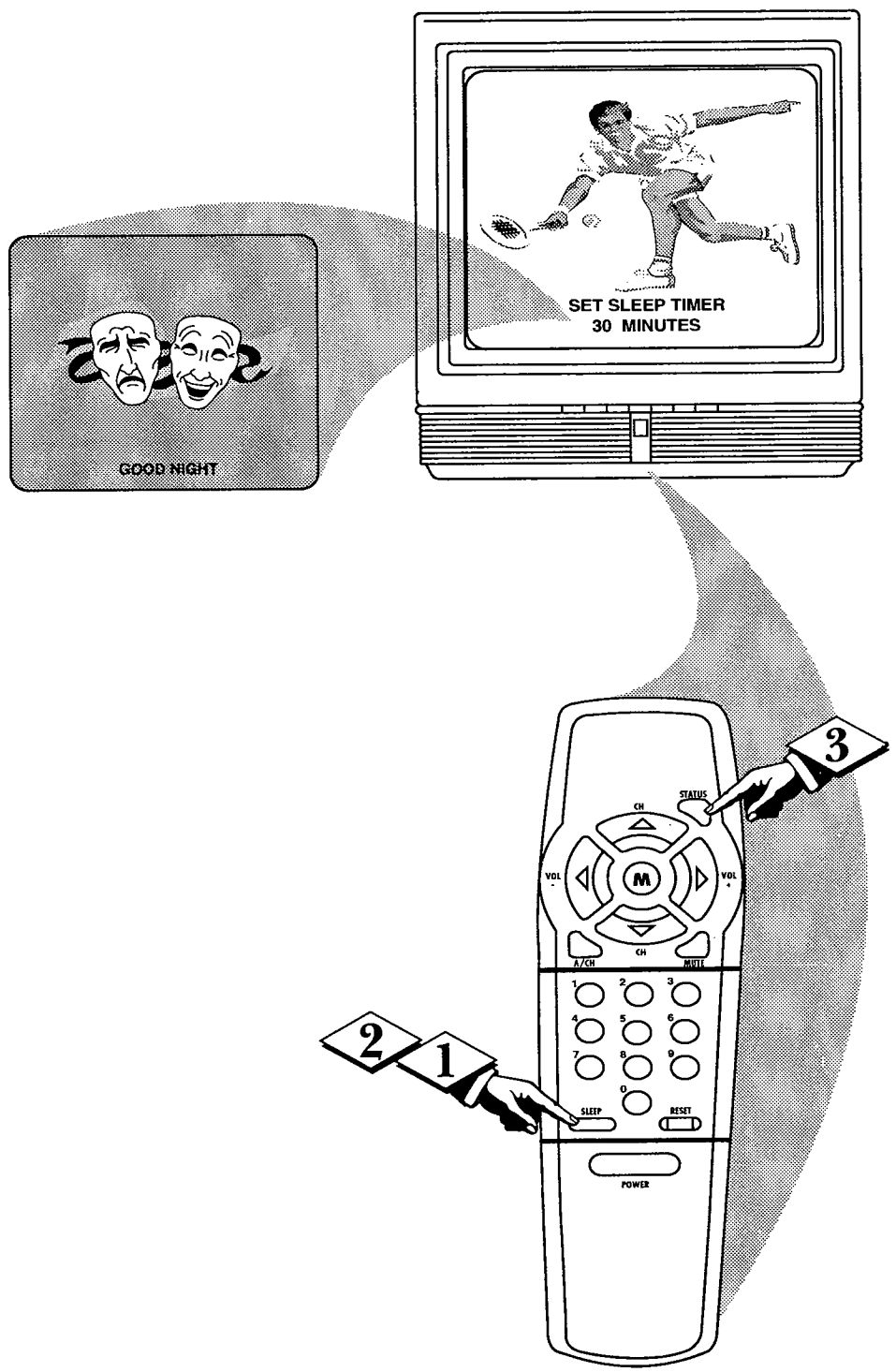
3. After you have picked the time interval for the TV to turn off, **press the STATUS button** to clear the screen.

STOP

Remember. If you ever want to see how many minutes are left before the TV shuts itself off, press the SLEEP button on the remote.

If you want to stop a SLEEP TIMER setting, reset the timer back to 0 MINUTES. You could also turn the TV off, and then back on again, to cancel a setting.

A few seconds before the TV is to shut off a message will come on the screen telling you *GOOD NIGHT.*



BASIC REMOTE CONTROL OPERATION

After installing the batteries into the remote, point the remote toward the front of the TV (remote sensor window) when pressing buttons.

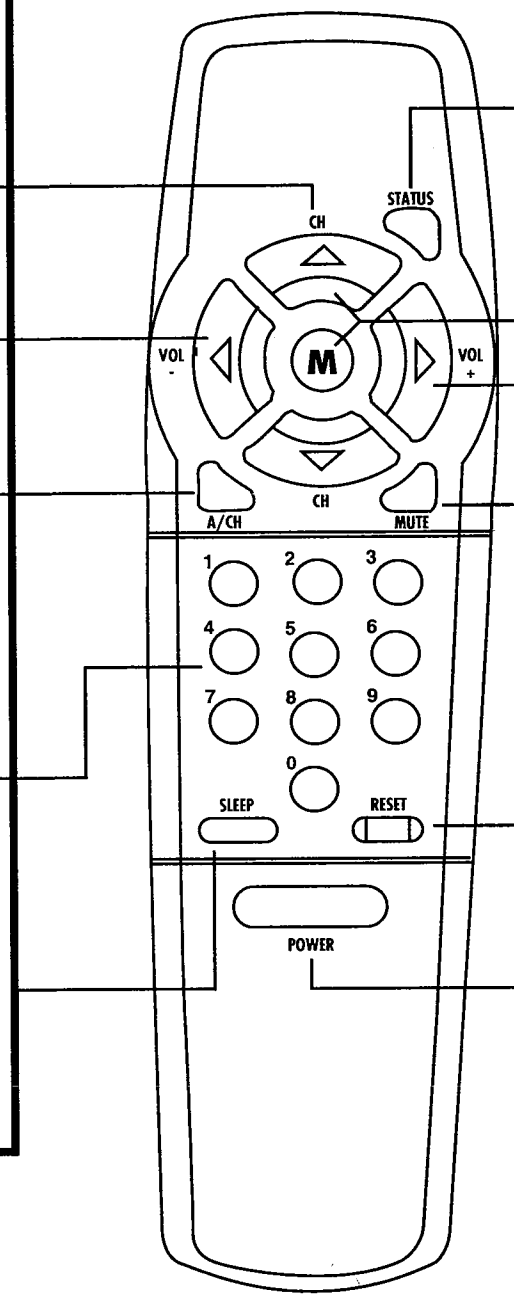
Channel Scan Buttons
Press to scan up (▲) or down (▼) through channel numbers.

Volume (-,+) Buttons
Press to increase (VOL+) or decrease (VOL-) the TV sound level.

Alternate Channel Button
Press to select the previously viewed channel.
For example: You are watching channel 4 and change to channel 10 (using the channel number buttons). Press A/CH and your TV will return to channel 4. Press A/CH again and your TV will return to channel 10.

Number Buttons
Press the number buttons to select TV channels. Press two number buttons to select channels. For example: to select channel 6...press "0" first and then "6".

Sleep Timer Button
Set the TV to automatically turn itself OFF. See Sleep Timer section for details.



Status Button
Press to see the current channel number on the TV screen. Also press this button to clear the screen after control adjustments.

Menu (▲▼) Buttons
Press the M button to display on-screen feature controls. Press ▲ or ▼ buttons to move forward and backward through the list of on-screen controls.

(+) and (-) Buttons
Press to adjust the selected on-screen feature control.

Mute Button
Press to turn the sound OFF on the TV. Press again to return the sound to its previous level.

Reset Button
Press to return the TV to certain factory set levels for picture and color controls.

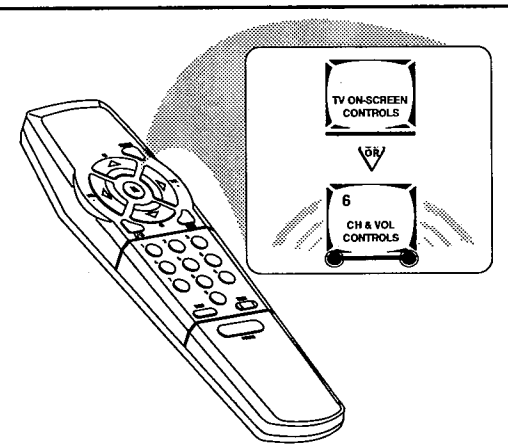
Power Button
Press to turn the TV ON and OFF.

IMPORTANT REMINDER NOTE

The Menu (M) button controls how certain buttons on the remote are used.

When the M button is pressed:
the MENU, (M)▲▼, and (+,-) buttons are used to select and adjust on-screen TV features.

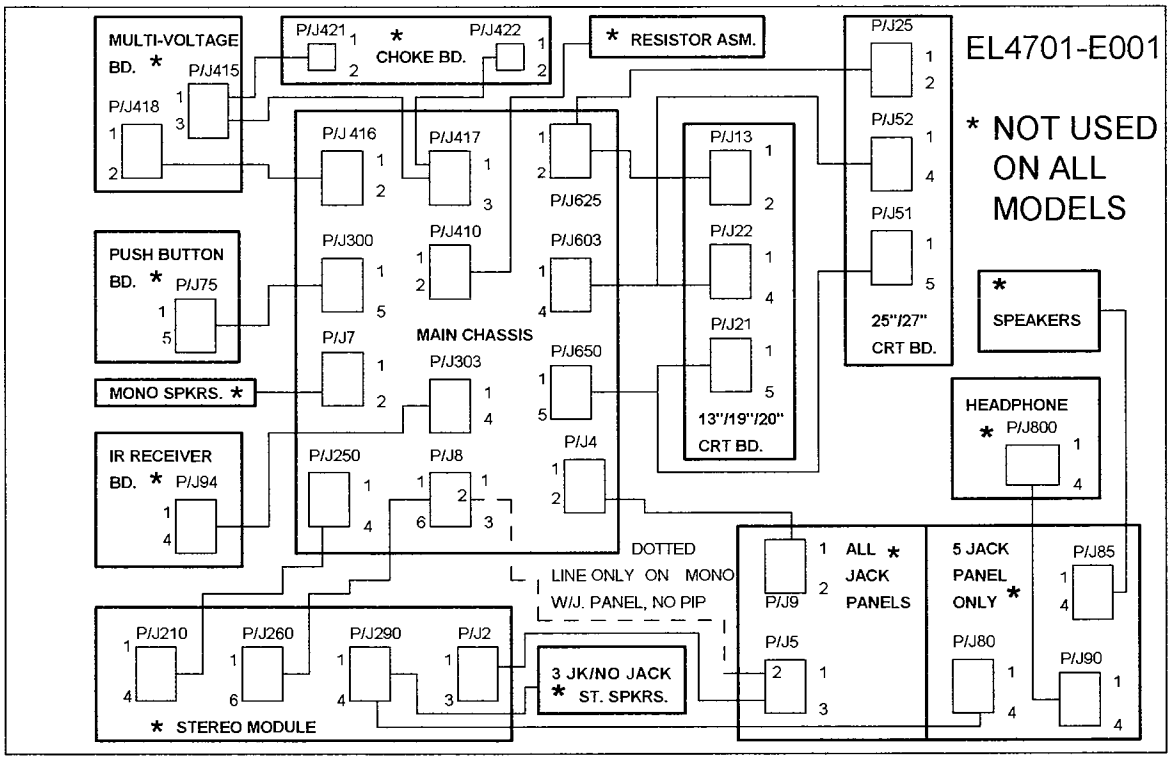
During normal TV viewing :
the buttons that surround the Menu button are used to select CH(annels) and adjust the TV VOL(ume.)



REMOTE TRANSMITTERS REPLACEMENT LIST

Ref.	Description	Part Number
REMOTE TRANSMITTERS		
H123AA AA01	UR12	4835 219 17457
H203AA AA01	N/PIP	4835 219 17426
M123AA AA01	UR12 N/PIP	4835 219 17429
M123AB AA01	UR12 PIP	4835 219 17431
M133AA AA01	UR13 N/PIP	4835 219 17432
S123AA AA01	UR12	4835 219 17447
T103AG MA01	10 Pushbutton	4835 219 17438
T103AG SA01	10 Pushbutton	4835 219 17461
T103AG YA01	10 Pushbutton	4835 219 17449
T203AG MA01	20 Pushbutton	4835 219 17439
T203CG PA01	20 Pushbutton	4835 219 17441
T213AG MA01	21 Pushbutton	4835 219 17442
T213AG SA01	21 Pushbutton	4835 219 17451
T213BG PH01	21 Pushbutton	4835 219 17443
T213CG SA01	21 Pushbutton	4835 219 17444
T213AG YA01	21 Pushbutton	4835 219 17462
Y123AA AA01	UR12 N/PIP	4835 219 17452
Y123AB AA01	UR12 PIP	4835 219 17465

Y1/Y4 WIRING DIAGRAM



To order parts call the TOLL FREE Philips Sales Center number : 1-800-851-8885

TELEVISION SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock Hazard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with an s by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol s on the schematic diagrams and /or exploded views.
7. When servicing any unit, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug). Defeating this safety feature may create a potential hazard to the servicer and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform an ac leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also, check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safely operated without danger of electrical shock .

* Broken line ▬ • ▬ • ▬ • ▬ • ▬ • ▬

Implosion

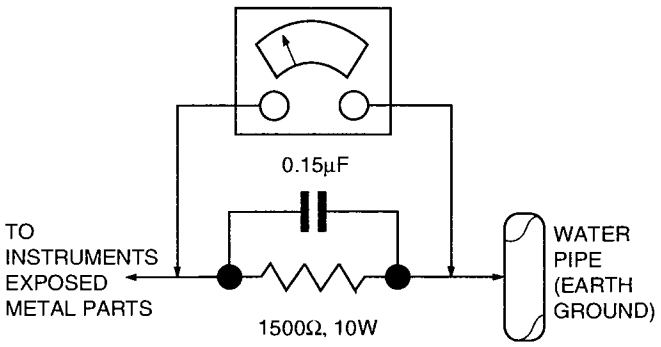
1. All picture tubes used In current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value - no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV reading be recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.
6. New picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.



Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10W resistor paralleled by a 0.15uF. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms/ volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5milliamps. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note:An ac adapter is necessary when a polarized plug Is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

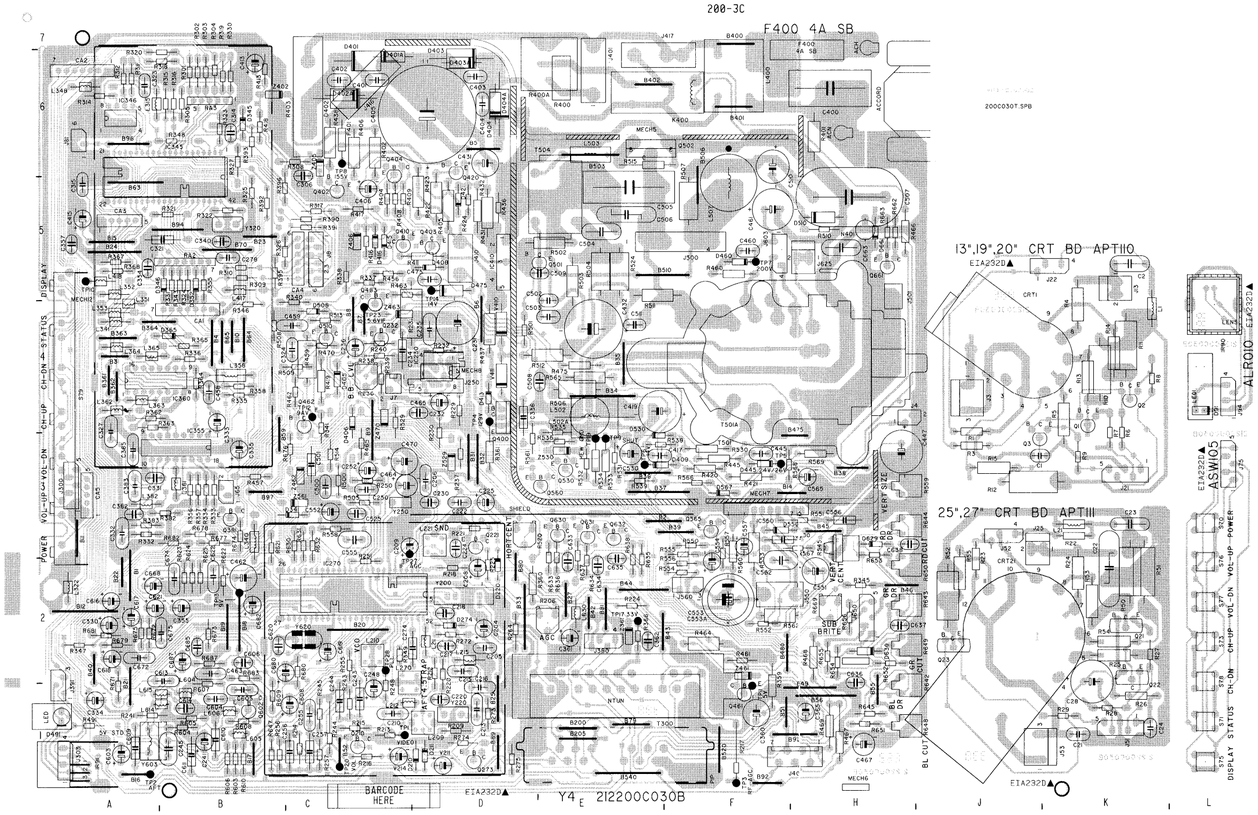
The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved type.

Parts Replacement

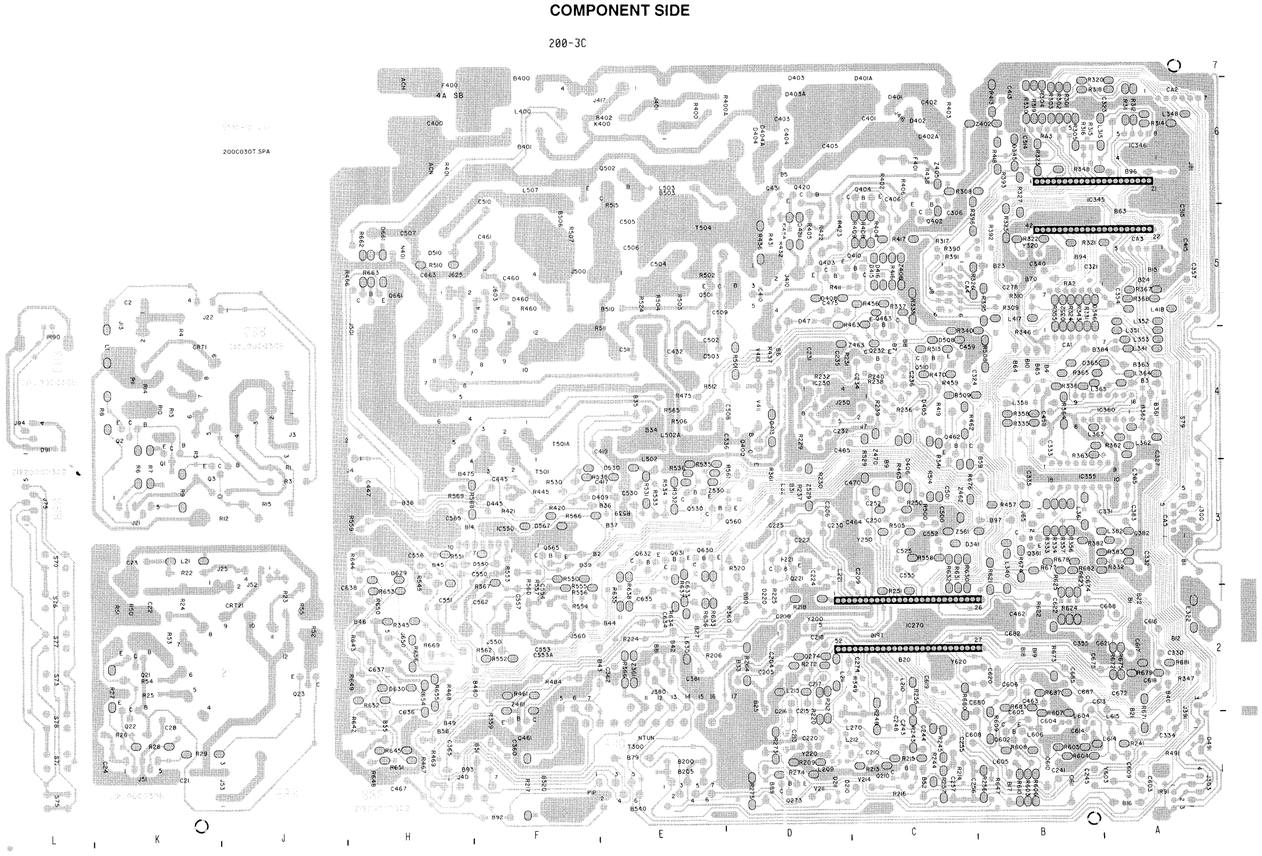
Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards.

Y4 MAIN CHASSIS P.C. BOARDS (A001 VERSIONS)

REFER TO PAGE 19 FOR PC BOARD COMPONENT LOCATION TABLE AND TEST POINT TABLE

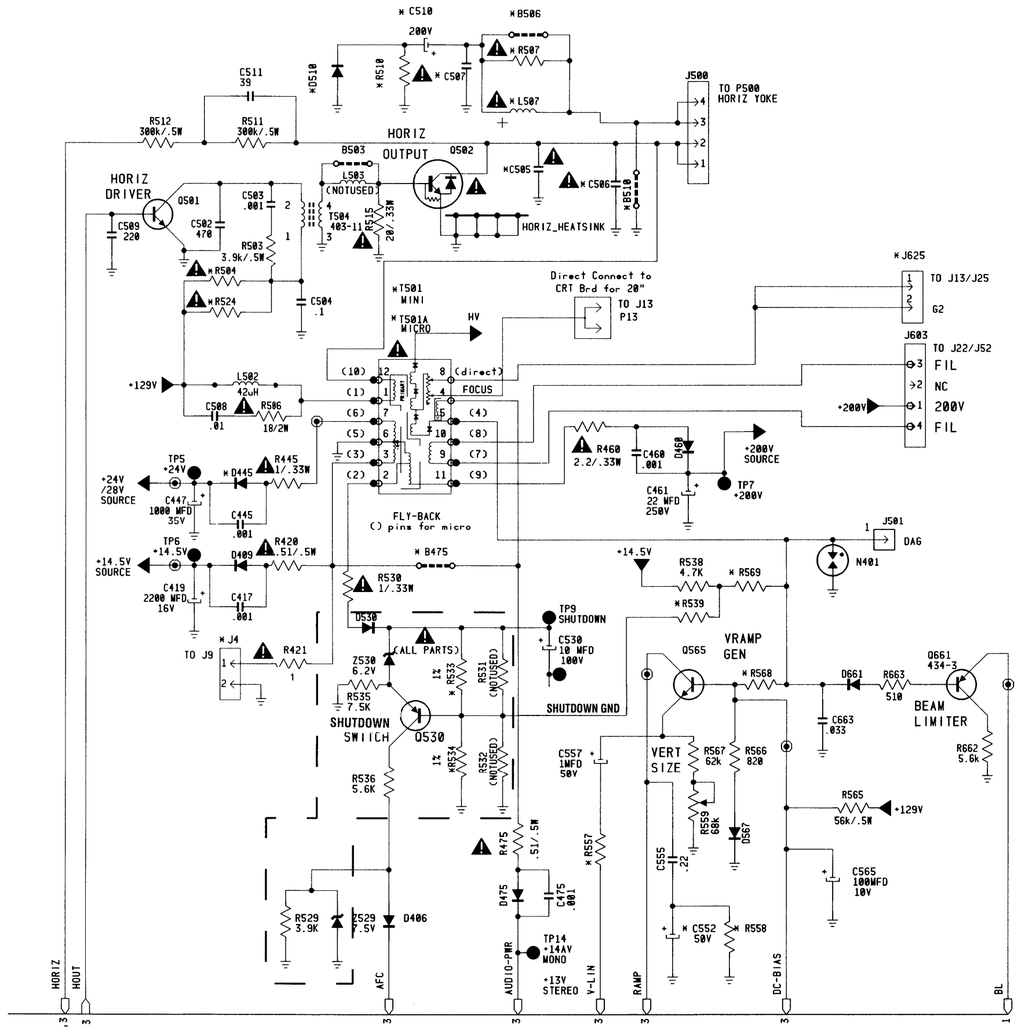


COMPONENT SIDE



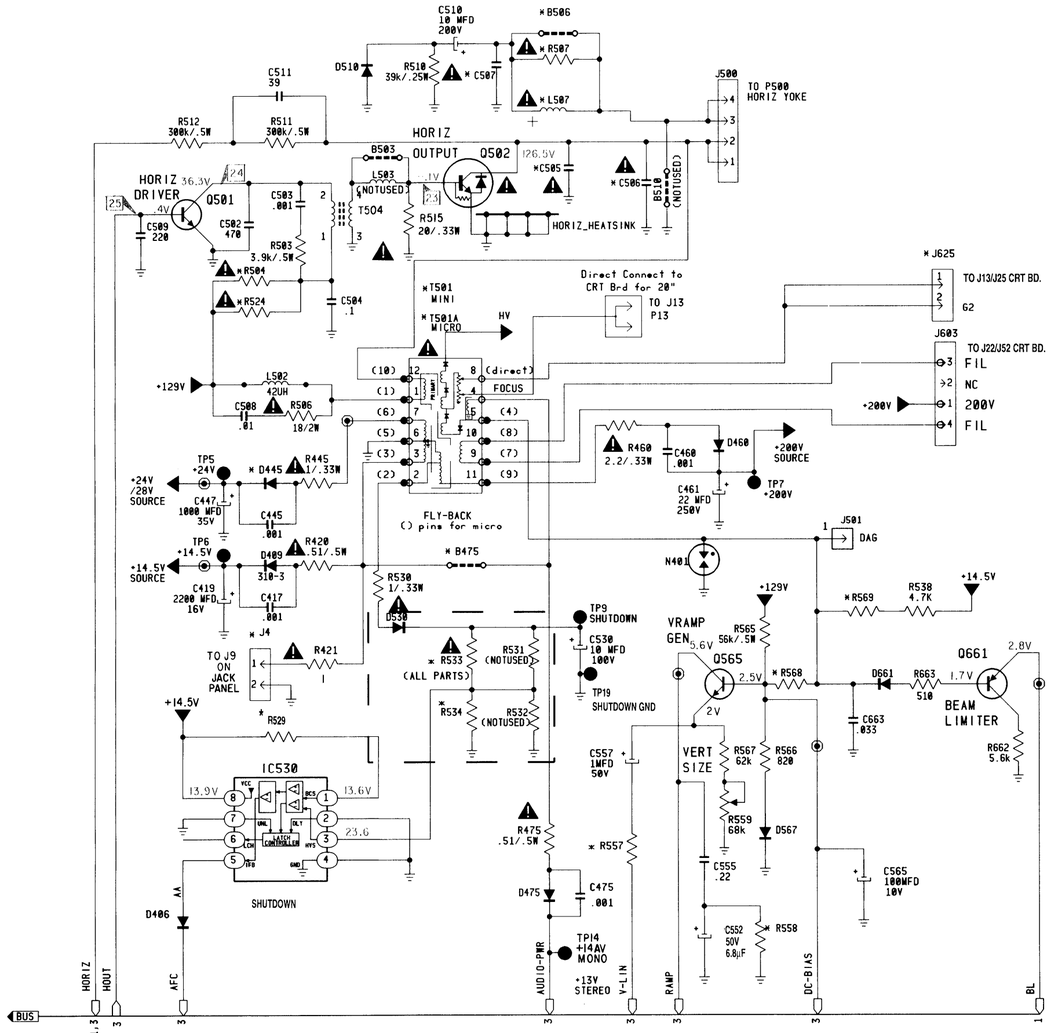
COPPER SIDE

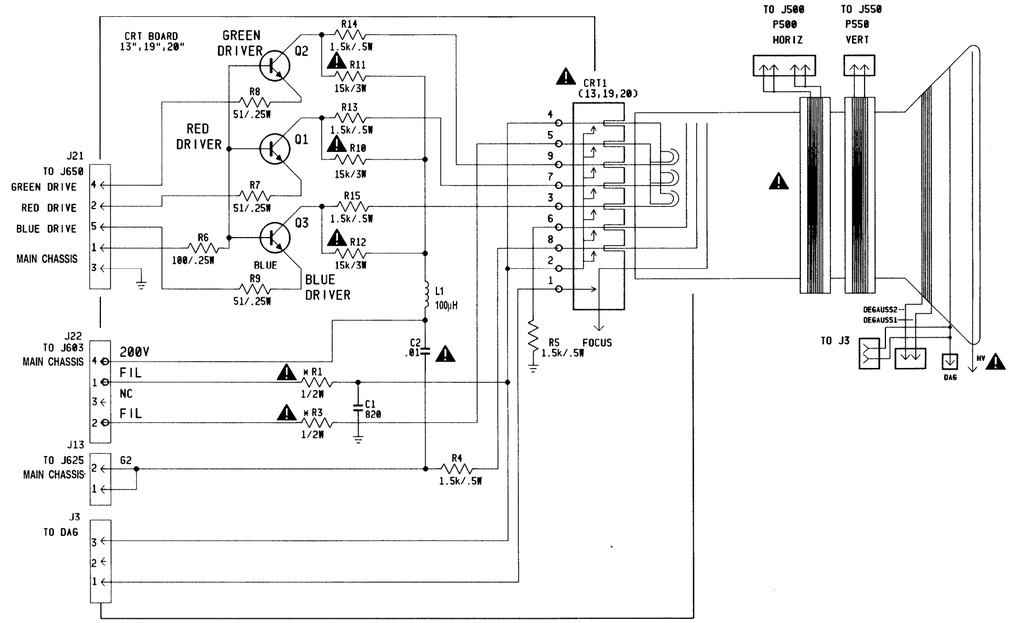
THIS SCHEMATIC IS USED ONLY IN Y4 CHASSIS
SECTION D (PARTIAL) Frame I16

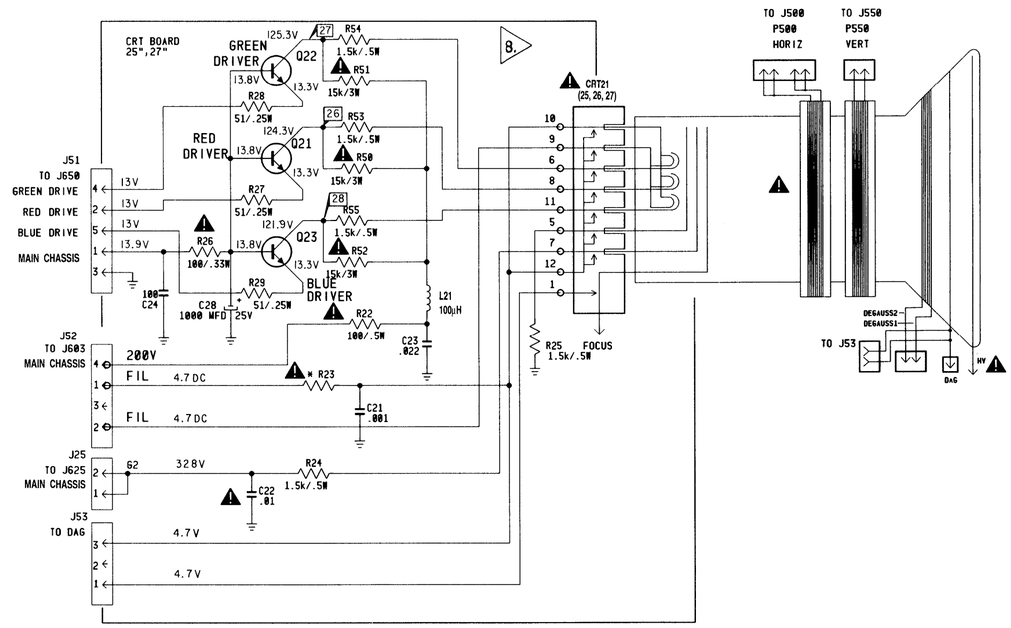


Y1/Y4 MAIN CHASSIS SCHEMATIC DIAGRAM SECTION D

Frame I11





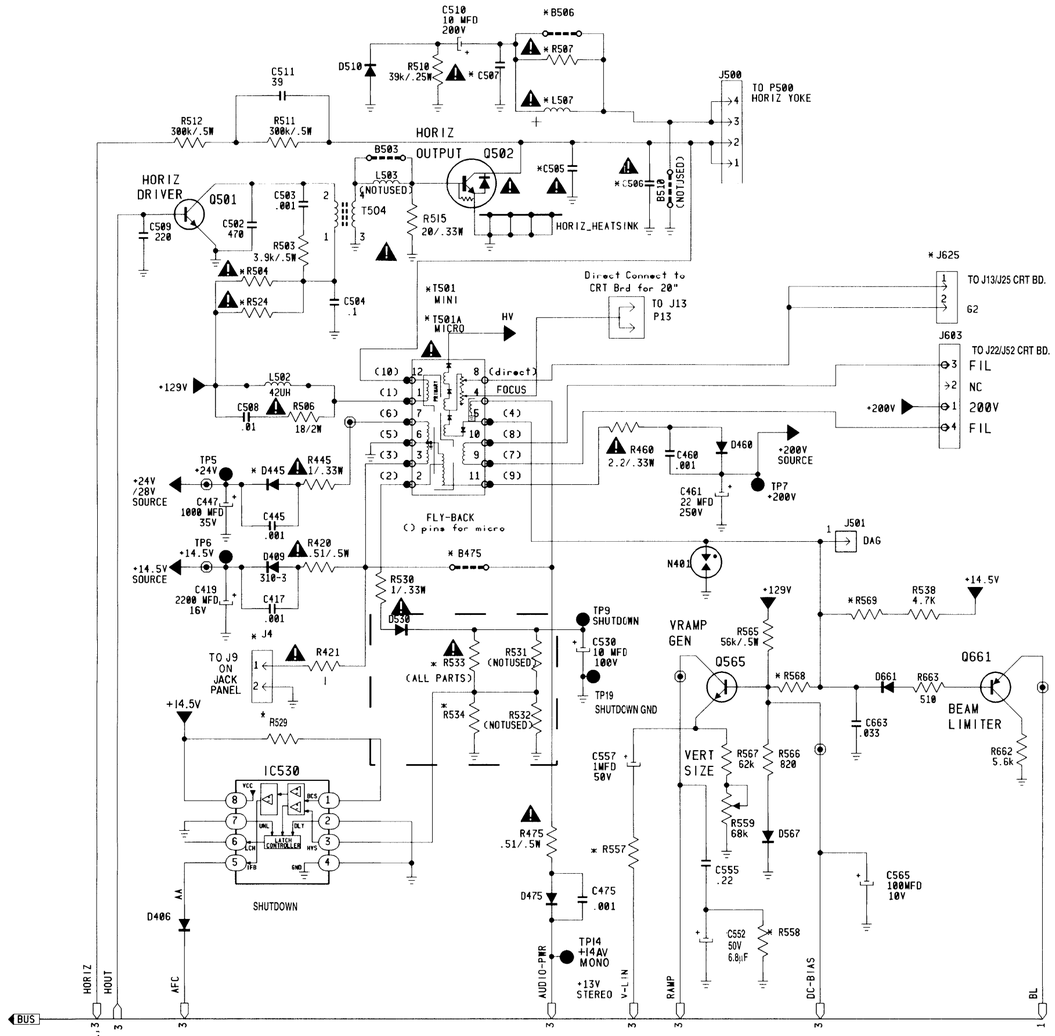


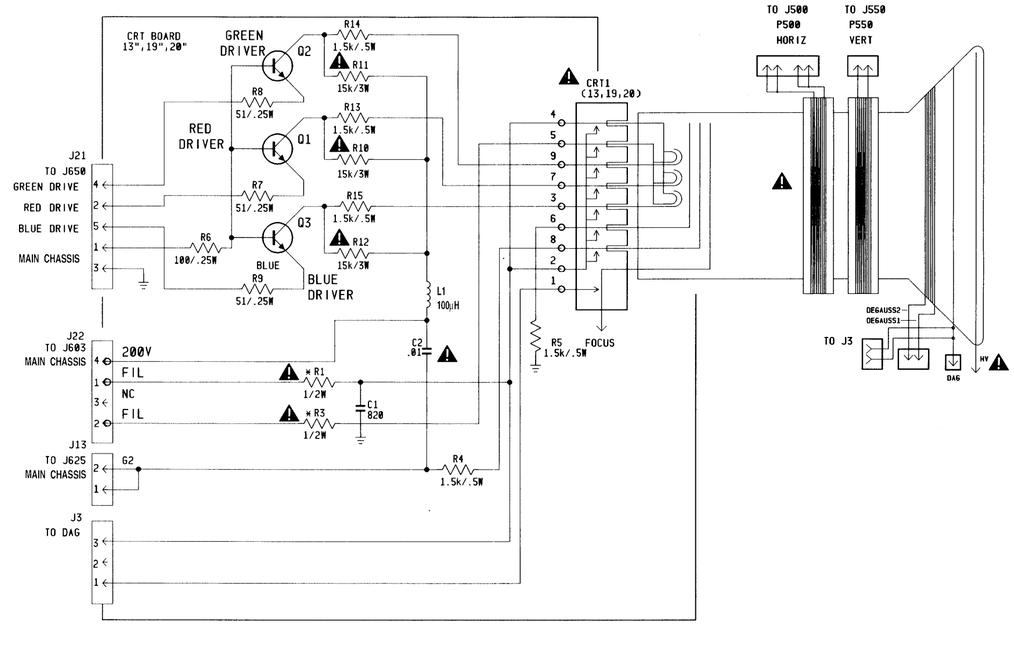
TO SEC. C

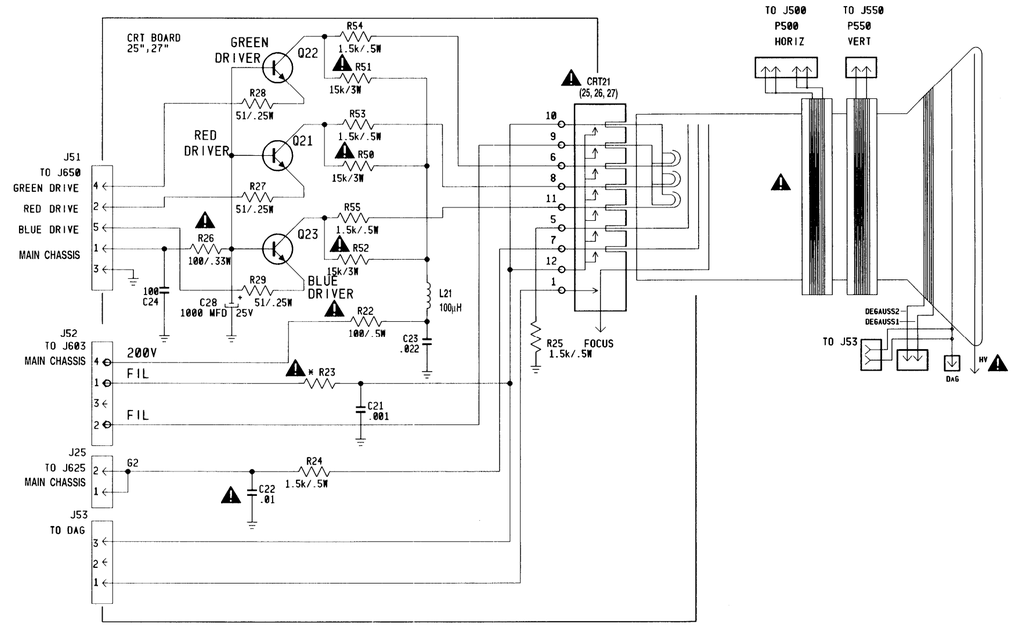
*= VALUE WILL VARY WITH SCREEN SIZE AND FEATURES. SEE REPLACEMENT PARTS LIST FOR PART VALUE AND PART NUMBER.

Y1/Y4 MAIN CHASSIS SCHEMATIC DIAGRAM SECTION D

Frame I11







TO SEC. C

*= VALUE WILL VARY WITH SCREEN SIZE AND FEATURES. SEE REPLACEMENT PARTS LIST FOR PART VALUE AND PART NUMBER.

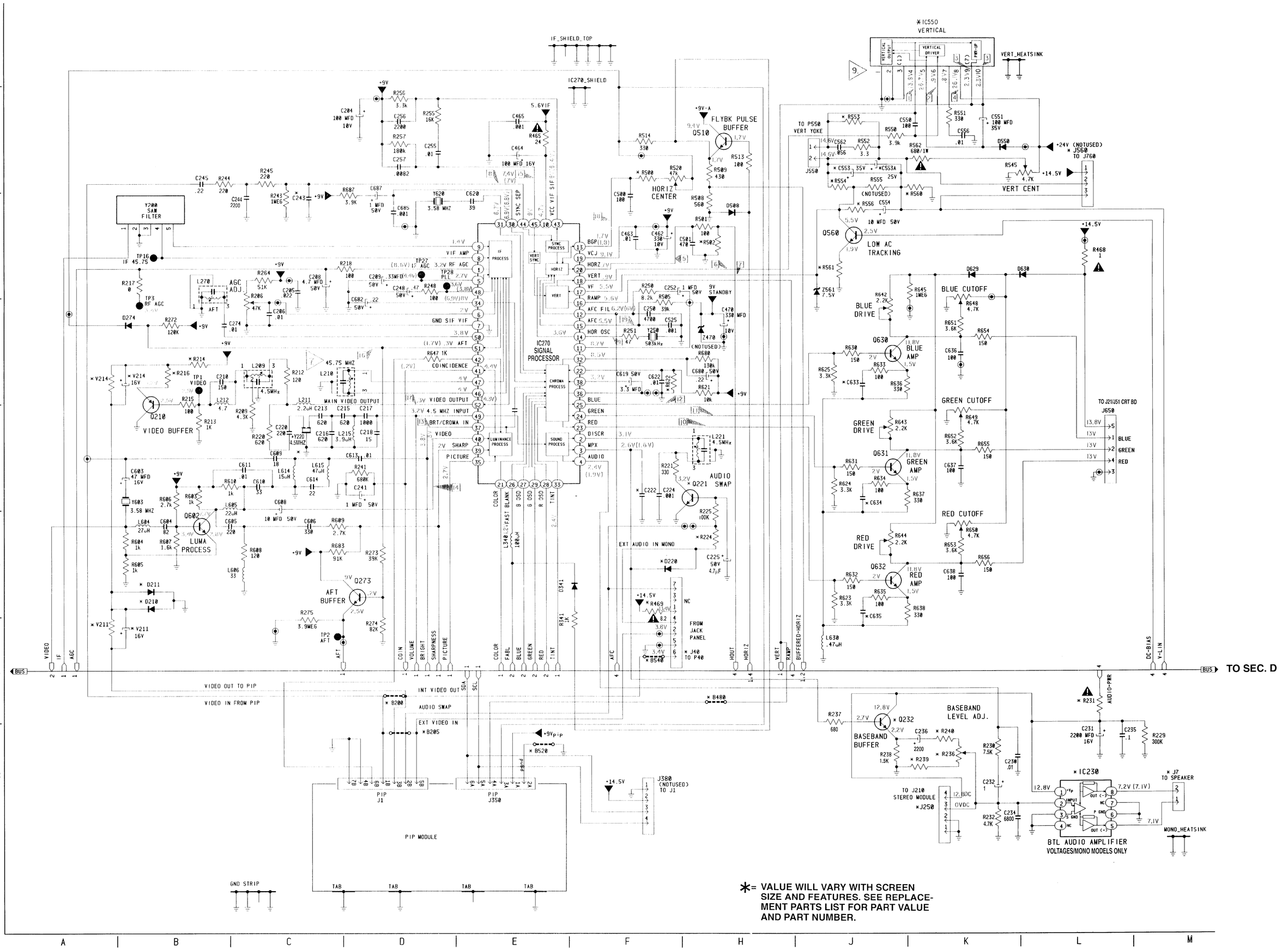
7519-23

THIS PRINT SUPERSEDES ALL PREVIOUS PRINTS

M

Y1/Y4 MAIN CHASSIS SCHEMATIC DIAGRAM SECTION C

Frame I6


IF_SHIELD_TOP
IC270_SHIELD
IC270 SIGNAL PROCESSOR
IF PROCESS
SYNC PROCESS
CHROMA PROCESS
LUMINANCE PROCESS
SOUND PROCESS
IC550 VERTICAL
VERTICAL OUTPUT
VERTICAL DRIVER
PRE-AMP
VERT_HEATSINK
FLYBK PULSE BUFFER
HORIZ CENTER
VERT CENT
LOW AC TRACKING
BLUE CUTOFF
BLUE DRIVE
BLUE AMP
GREEN CUTOFF
GREEN DRIVE
GREEN AMP
RED CUTOFF
RED DRIVE
RED AMP
AUDIO SWAP
BASEBAND BUFFER
BASEBAND LEVEL ADJ.
BTL AUDIO AMPLIFIER
VOLTAGES/MONO MODELS ONLY
Y200 SAW FILTER
AGC ADJ
VIDEO BUFFER
LUMA PROCESS
AFT BUFFER
FROM JACK PANEL
TO P40
TO P550 VERT YOKE
TO J210 STEREO MODULE *J250
TO J21/J51 CRT BD J650
PIP MODULE
PIP J1
PIP J350
J380 (NOTUSED) TO J1
GND STRIP
TAB
MAIN VIDEO OUTPUT
INT VIDEO OUT
EXT VIDEO IN
VIDEO OUT TO PIP
VIDEO IN FROM PIP
MONO_HEATSINK
TO SEC. B
TO SEC. D
BUS
VIDEO
IF
AGC
COLOR
FABL
BLUE
GREEN
RED
TINT
COIN
VOLUME
BRIGHT
SHARPNESS
PICTURE
SDA
SCL
AFC
HOUT
HORIZ
VERT
RAMP
BUFFERED-HORIZ
DC-BIAS
Y-LIN
AUDIO-PWR
+9V
+9V-A
+9VPIP
+14.5V
+24V (NOTUSED) * J560 TO J760
TP16 IF 45.75
TP1 VIDEO
TP3 RF AGC
TP2 AFT
TP27 IF AGC
TP28 PLL
45.75 MHZ
4.5MHz
Y220 4.5MHz
Y603 3.58 MHZ
Y620 3.58 MHZ
Y250 503kHz
L221 4.5MHz
Q210
Q602
Q273
Q510
Q560
Q630
Q631
Q632
Q221
Q232
IC230
Z561 7.5V
Z470 (NOTUSED)
D274
D273
D341
D508
D550
D629
D630
D220
B200
B205
B520
B480
B540
R469
R468
R231
L630 .47uH
L341 12uH
L340 12uH
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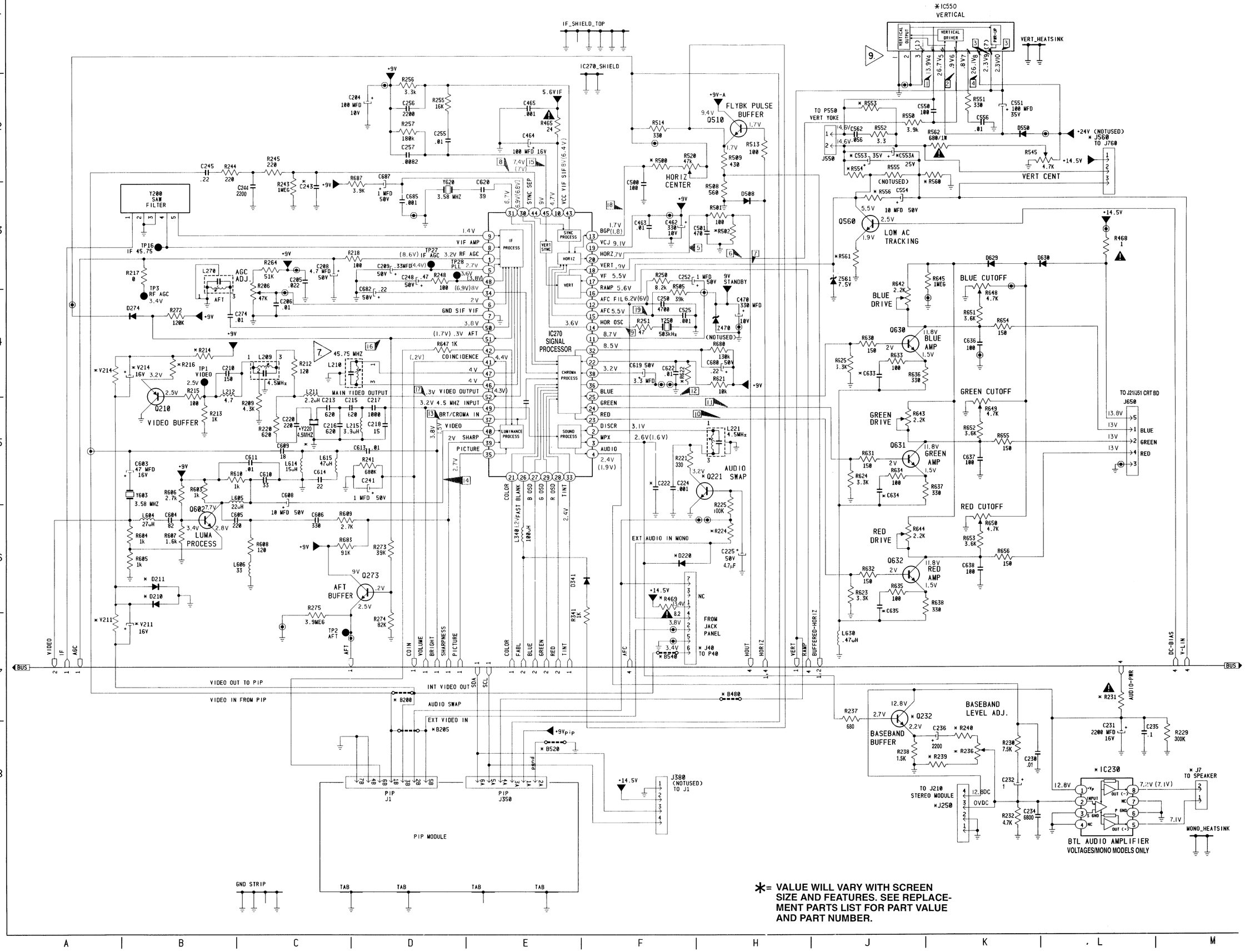
Y1/Y4 MAIN CHASSIS SCHEMATIC DIAGRAM SECTION C

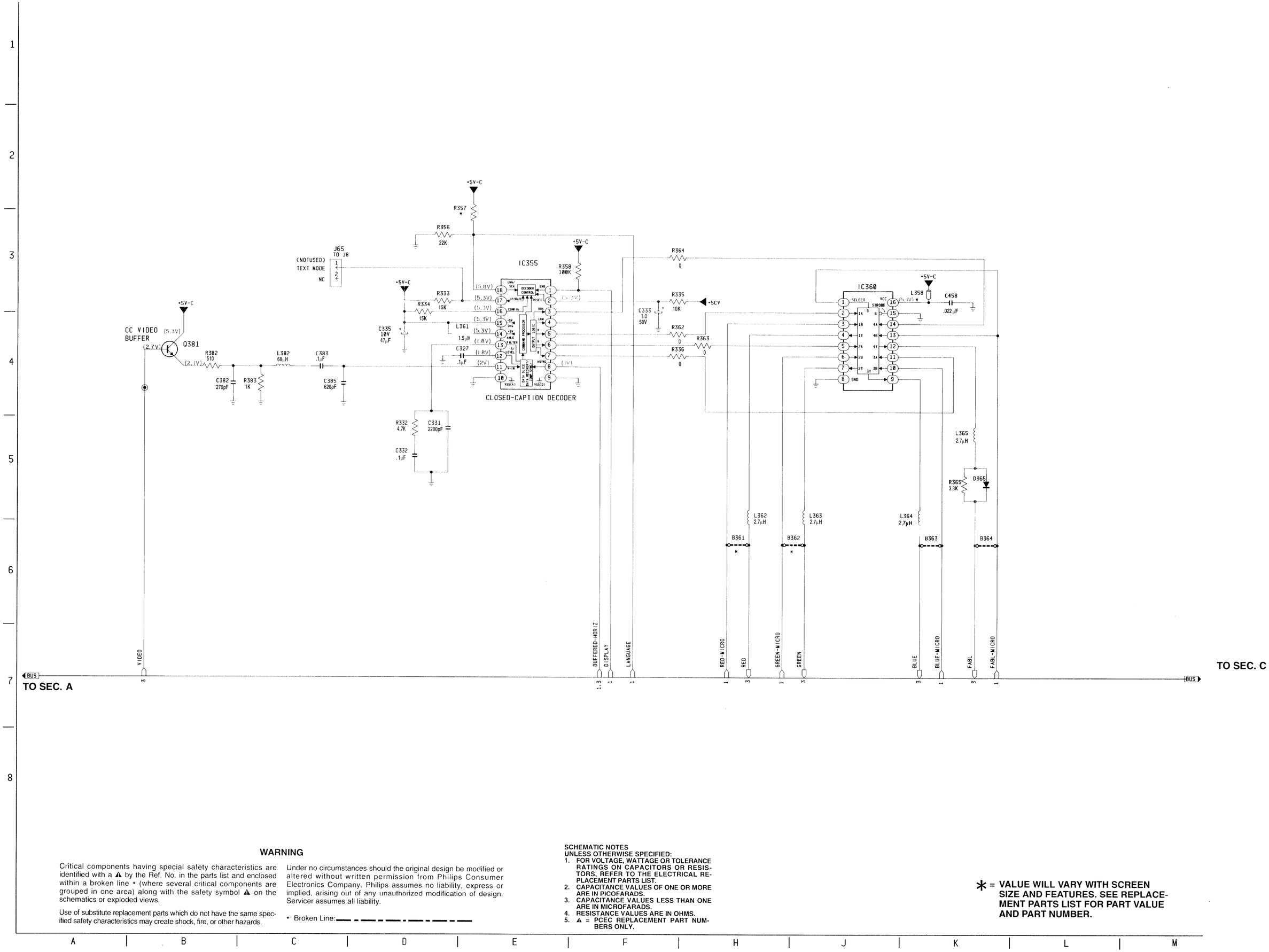
Frame I6

7 PIN CHIP USED



Y1/Y4 MAIN CHASSIS SCHEMATIC DIAGRAM SECTION B

Frame I1



WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line * (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips Consumer Electronics Company. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* Broken Line: — — — — — — —

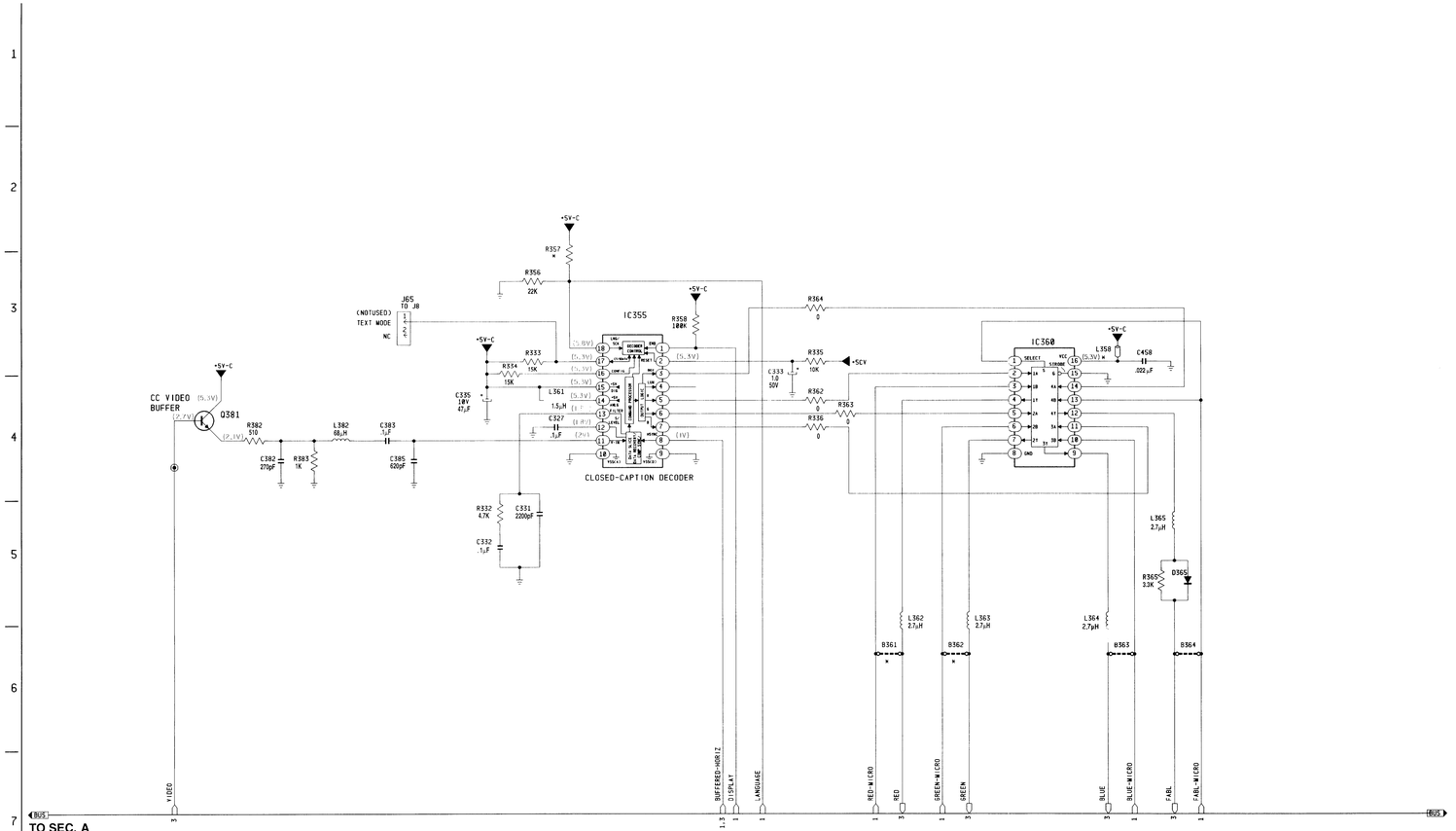
SCHEMATIC NOTES
UNLESS OTHERWISE SPECIFIED:

1. **FOR VOLTAGE, WATTAGE OR TOLERANCE RATINGS ON CAPACITORS OR RESISTORS, REFER TO THE ELECTRICAL REPLACEMENT PARTS LIST.**
2. **CAPACITANCE VALUES OF ONE OR MORE ARE IN PICOFARADS.**
3. **CAPACITANCE VALUES LESS THAN ONE ARE IN MICROFARADS.**
4. **RESISTANCE VALUES ARE IN OHMS.**
5. **⚠ = PCEC REPLACEMENT PART NUMBERS ONLY.**

*** = VALUE WILL VARY WITH SCREEN SIZE AND FEATURES. SEE REPLACEMENT PARTS LIST FOR PART VALUE AND PART NUMBER.**

Y1/Y4 MAIN CHASSIS SCHEMATIC DIAGRAM SECTION B

Frame I1



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Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

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• Broken Line: — — — — — — —

SCHEMATIC NOTES
UNLESS OTHERWISE SPECIFIED:

1. **FOR VOLTAGE, WATTAGE OR TOLERANCE RATINGS ON CAPACITORS OR RESISTORS, REFER TO THE ELECTRICAL REPLACEMENT PARTS LIST.**
2. **CAPACITANCE VALUES OF ONE OR MORE ARE IN PICOFARADS.**
3. **CAPACITANCE VALUES LESS THAN ONE ARE IN MICROFARADS.**
4. **RESISTANCE VALUES ARE IN OHMS.**
5. **⚠ = PCEC REPLACEMENT PART NUMBERS ONLY.**

*** = VALUE WILL VARY WITH SCREEN SIZE AND FEATURES. SEE REPLACEMENT PARTS LIST FOR PART VALUE AND PART NUMBER.**

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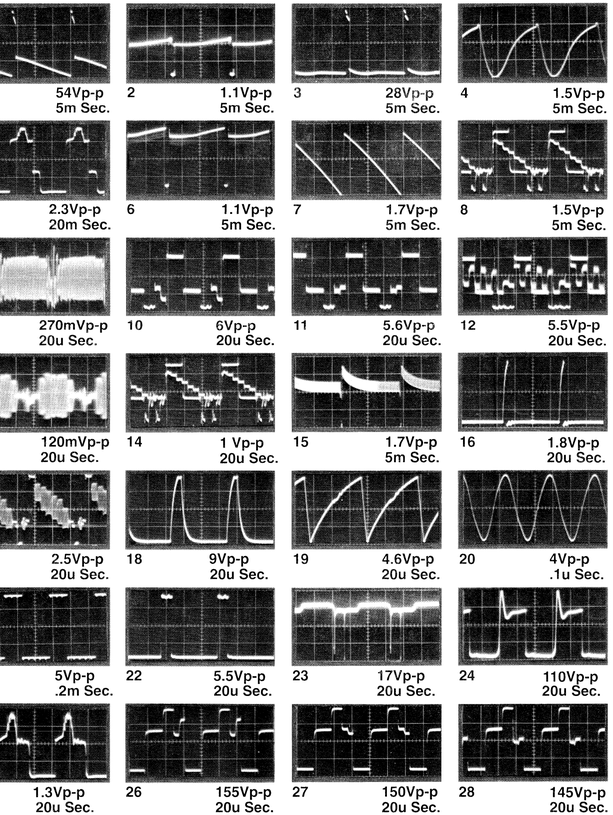
Y1/Y4 MAIN CHASSIS WAVEFORM PHOTOGRAPHS

THE NUMBERED WAVEFORM PHOTOS BELOW CORRESPOND TO THE LOCATIONS OF NUMBERS WITHIN BOXES INDICATED ON THE SCHEMATIC.



SSIS WAVEFORM NOTES:
WAVEFORM PHOTOS WERE TAKEN UNDER THE CONDITIONS AS STATED IN STEPS 1 & 2 OF THE
I CHASSIS SCHEMATIC NOTES.
EP TIME/CM SETTINGS ARE SHOWN BELOW PHOTOS IN THE CALIBRATED POSITION. HORIZONTAL
TIONING OF THE WAVEFORMS WERE ADJUSTED FOR MAXIMUM CLARITY.
31,32, 33, 34, 35, 36 ARE PULSE WIDTH MODULATED AND WILL VARY WITH CONTROL SETTINGS. ALL SHOULD BE
OXIMATELY 5V AND VIEWED AT .2M SEC. THIS WAVEFORM PHOTOGRAPH IS TYPICAL OF ANY ONE OF THESE SIGNALS.

Y1/Y4 SCHEMATIC COMPONENT LOCATION TABLE ADJUSTMENTS, DIODES, Cs, MISC, TRANSISTORS

COMP.	SCH. SEC.	LOCATION	COMP.	SCH. SEC.	LOCATION	COMP.	SCH. SEC.	LOCATION	COMP.	SCH. SEC.	LOCATION	COMP.	SCH. SEC.	LOCATION
IC346	A	B2	R648	C	K4	Y320	A	D4	D416	A	H8	D629	C	K3
Q273	C	D6	D382	A	F5	Q461	A	J8	D445	D	B5	D630	C	K3
R520	C	F3	IC530	D	B7	D403	A	C7	D661	D	E6	D661	D	E6
D341	C	F6	Q403	A	H7	Q462	A	K8	Q602	C	B6	Z361	A	K1
IC365	B	E4	R649	C	K5	D404	A	C7	D460	D	D5	Z402	A	H7
Q381	B	B4	D365	B	K5	Q463	A	L8	Q630	C	J4	Z406	A	H8
R539	D	D7	IC550	C	K1	D405	A	J6	D475	D	C7	Z462	A	K8
D345	A	D5	Q404	A	H7	Q501	D	A4	Q631	C	J5	Z463	A	L8
IC360	B	J4	R650	C	K6	Q502	D	C4	D491	A	C6	Z470	C	H4
Q400	A	F8	D401	A	C7	D408	A	H7	Q632	C	J6			
R567	D	D7	Y250	C	F4	Q510	C	H2	D508	C	H3			
D346	A	F4	Q420	A	E7	D409	D	B5	Q661	D	E6			
IC410	A	E8	R669	A	J5	D415	A	H8	D550	C	K2			
Q402	A	E7	D402	A	C7	Q560	C	J4	D567	D	D7			

00ASW105 A001 CUSTOMER SWITCH MODULE

00ALR008 REMOTE RECEIVER MODULE

INTERCONNECT CHART

Stereo Bd. Schematic - Pg. 33/Frame (D1)
Jack Panel Schematic - Pg. 35/Frame (J1)
PIP Module Schematic - Pg. 37/Frame D1
Tuner Schematic - Pg. 39/Frame D9

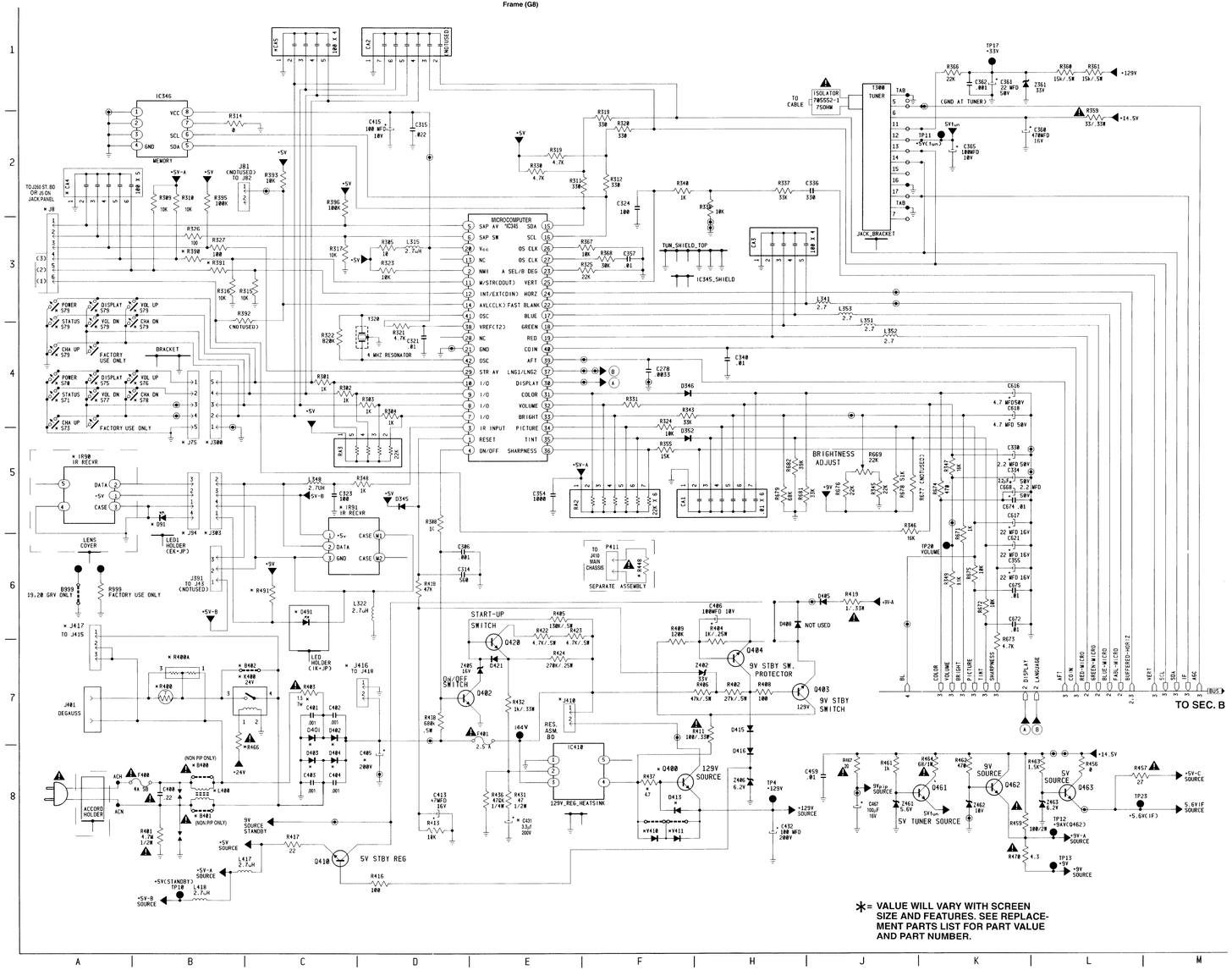
REF. NUMBERS BEGINNING WITH THE LETTER V ARE DESIGNATED AS "VARIABLE PARTS" AND MAY BE RESISTORS, CAPACITORS, ETC. REFER TO THE PARTS LISTS.

MAIN CHASSIS SCHEMATIC NOTES:
UNLESS OTHERWISE SPECIFIED:

1. ALL VOLTAGES AND WAVEFORMS WERE TAKEN UNDER THE CONDITIONS AS FOLLOWS:
   - LINE VOLTAGE MAINTAINED AT 120VAC, VIA AND ISOLATION TRANSFORMER. - STEREO = OFF
   - SOURCE = ANTENNA
   - PICTURE CONTROL = 2.6Vdc AT PIN 35 of IC270
   - BRIGHTNESS CONTROL = 3Vdc AT PIN 37 OF IC270
   - COLOR CONTROL = 2.4Vdc AT PIN 21 OF IC270
   - TINT CONTROL = 2.5Vdc AT PIN 33 OF IC270
   - SHARPNESS CONTROL = 2.6Vdc AT PIN 39 IC270
   - ALL WAVEFORM PHOTOS, VOLTAGES AND SERVICE ADJUSTMENTS WERE PERFORMED ON MODEL RR2535 25" SET.
2. VOLTAGES (WITHOUT PARENTHESIS) WERE TAKEN WITH AN NTSC SIGNAL GENERATOR DELIVERING 1 Vp-p AT THE ANTENNA TERMINAL.
3. VOLTAGES WITHIN PARENTHESIS WERE TAKEN WITH NO SIGNAL APPLIED. THEY ARE LISTED ONLY WHEN AN APPRECIABLE CHANGE WAS NOTED.
4. VOLTAGES SHOWN WITHIN BOXES WERE TAKEN WITH THE SET IN THE STAND-BY MODE (POWER SUPPLIED TO THE CHASSIS, SET TURNED OFF).
5. ALL VOLTAGES ARE POSITIVE DC WITH RESPECT TO THE GROUND COMMON TO THAT AREA OF CIRCUITRY AND MAY VARY DUE TO NORMAL PRODUCTION TOLERANCES. VOLTAGE SOURCES ARE ALSO NOMINAL.
6. COMPONENT AND SPECIAL SYMBOLS:
   * = INDICATES THESE COMPONENTS ARE SMD "CHIP TYPE" COMPONENTS AND AS SUCH WILL BE LOCATED ON THE BOTTOM SIDE OF THE PRINTED CIRCUIT BOARD.
   x = INDICATES THESE COMPONENTS WILL VARY DEPENDING UPON SCREEN SIZE, PRODUCTION DATES AND OPTIONAL FEATURES INSTALLED. SEE THE REPLACEMENT PARTS LIST FOR SPECIFIC PART INFORMATION.
7. THIS POINT (PIN 51 IC 270) IS SENSITIVE TO THE TOUCH OF A PROBE AND MAY CAUSE MOMENTARY LOSS OF PICTURE.
8. THESE VOLTAGES WILL VARY SUBSTANTIALLY DEPENDING UPON G2 AND CUT-OFF CONTROL SETTINGS (WHICH WILL VARY DEPENDING UPON THE CHARACTERISTICS OF A PARTICULAR PICTURE TUBE). ALSO VOLTAGES WILL VARY DEPENDING UPON CUSTOMER CONTROL SETTINGS (SEE NOTE 1)
9. PIN NUMBERS IN PARENTHESIS ON IC550 REFER TO 7 PIN USED IN 19 & 20" MODELS. 25, 26 & 27" MODELS USE THE 10 PIN IC.
10. THE NUMBERS 1 THRU 28 (WITHIN BOXES) CORRESPOND TO THE WAVEFORM PHOTOS.
11. FOR VOLTAGE, WATTAGE AND TOLERANCE RATINGS OF RESISTORS AND CAPACITORS SEE THE ELECTRICAL REPLACEMENT PARTS LIST.
12. ⚠ INDICATES PCEC REPLACEMENT PART NUMBERS ONLY.
13. ⇨ = INDICATES SIGNAL FLOW DIRECTION TO AND FROM THE TRUNK LINE.

Y1/Y4 MAIN CHASSIS SCHEMATIC DIAGRAM SECTION A

Frame (G8)

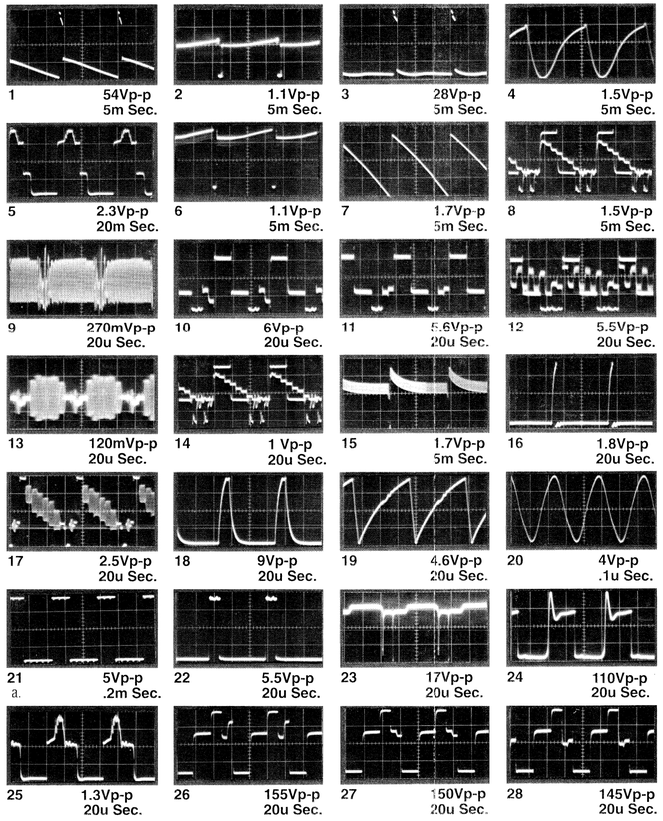


*= VALUE WILL VARY WITH SCREEN SIZE AND FEATURES. SEE REPLACEMENT PARTS LIST FOR PART VALUE AND PART NUMBER.

7519-20

Y1/Y4 MAIN CHASSIS WAVEFORM PHOTOGRAPHS

THE NUMBERED WAVEFORM PHOTOS BELOW CORRESPOND TO THE LOCATIONS OF NUMBERS WITHIN BOXES INDICATED ON THE SCHEMATIC.


1 54Vp-p 5m Sec.
2 1.1Vp-p 5m Sec.
3 28Vp-p 5m Sec.
4 1.5Vp-p 5m Sec.
5 2.3Vp-p 20m Sec.
6 1.1Vp-p 5m Sec.
7 1.7Vp-p 5m Sec.
8 1.5Vp-p 5m Sec.
9 270mVp-p 20u Sec.
10 6Vp-p 20u Sec.
11 5.6Vp-p 20u Sec.
12 5.5Vp-p 20u Sec.
13 120mVp-p 20u Sec.
14 1 Vp-p 20u Sec.
15 1.7Vp-p 5m Sec.
16 1.8Vp-p 20u Sec.
17 2.5Vp-p 20u Sec.
18 9Vp-p 20u Sec.
19 4.6Vp-p 20u Sec.
20 4Vp-p .1u Sec.
21 5Vp-p .2m Sec.
22 5.5Vp-p 20u Sec.
23 17Vp-p 20u Sec.
24 110Vp-p 20u Sec.
25 1.3Vp-p 20u Sec.
26 155Vp-p 20u Sec.
27 150Vp-p 20u Sec.
28 145Vp-p 20u Sec.

MAIN CHASSIS WAVEFORM NOTES:

1. ALL WAVEFORM PHOTOS WERE TAKEN UNDER THE CONDITIONS AS STATED IN STEPS 1 & 2 OF THE MAIN CHASSIS SCHEMATIC NOTES.
2. SWEEP TIME/CM SETTINGS ARE SHOWN BELOW PHOTOS IN THE CALIBRATED POSITION. HORIZONTAL POSITIONING OF THE WAVEFORMS WERE ADJUSTED FOR MAXIMUM CLARITY.

a. PINS 31,32, 33, 34, 35, 36 ARE PULSE WIDTH MODULATED AND WILL VARY WITH CONTROL SETTINGS. ALL SHOULD BE APPROXIMATELY 5V AND VIEWED AT .2M SEC. THIS WAVEFORM PHOTOGRAPH IS TYPICAL OF ANY ONE OF THESE SIGNALS.

Y1/Y4 SCHEMATIC COMPONENT LOCATION TABLE ADJUSTMENTS, DIODES, Cs, MISC, TRANSISTORS

COMP.	SCH. SEC.	LOCATION
C	C4	
A	B5	
C	L8	
C	B5	
C	C4	
C	B6	
C	H5	
C	H5	
C	B6	
A	E3	
C	J7	
C	B3	
C	B4	
IC346	A	B2
Q273	C	D6
R520	C	F3
D341	C	F6
IC355	B	E4
Q381	B	B4
R559	D	D7
D345	A	D5
IC360	B	J4
Q400	A	F8
R567	D	D7
D346	A	F4
IC410	A	E8
Q402	A	E7
R648	C	K4
D352	A	F5
IC530	D	B7
Q403	A	H7
R649	C	K5
D365	B	K5
IC550	C	K1
Q404	A	H7
R650	C	K6
D401	A	C7
Y250	C	F4
Q420	A	E7
R669	A	J5
D402	A	C7
Y320	A	D4
D461	A	J8
D403	A	C7
Q462	A	K8
D404	A	C7
D463	A	L8
D405	A	J6
Q501	D	A4
Q502	D	C4
D408	A	H7
Q510	C	H7
D409	D	B5
D415	A	H8
Q560	C	J4
D416	A	H8
Q565	D	D6
D445	D	B5
Q602	C	B6
D460	D	D5
Q630	C	J4
D475	D	C7
Q631	C	J5
D491	A	G6
Q632	C	J6
D508	C	H3
Q661	D	E6
D550	C	K2
D567	D	D7
D629	C	K3
D630	C	K3
D661	D	E6
Z361	A	K1
Z402	A	H7
Z406	A	H8
Z462	A	K8
Z463	A	L8
Z470	C	H4

00ASW105 A001 CUSTOMER SWITCH MODULE

00ALR008 REMOTE RECEIVER MODULE

INTERCONNECT CHART

Stereo Bd. Schematic - Pg. 33/Frame (D1)
Jack Panel Schematic - Pg. 35/Frame (J1)
PIP Module Schematic - Pg. 37/Frame D1
Tuner Schematic - Pg. 39/Frame D9

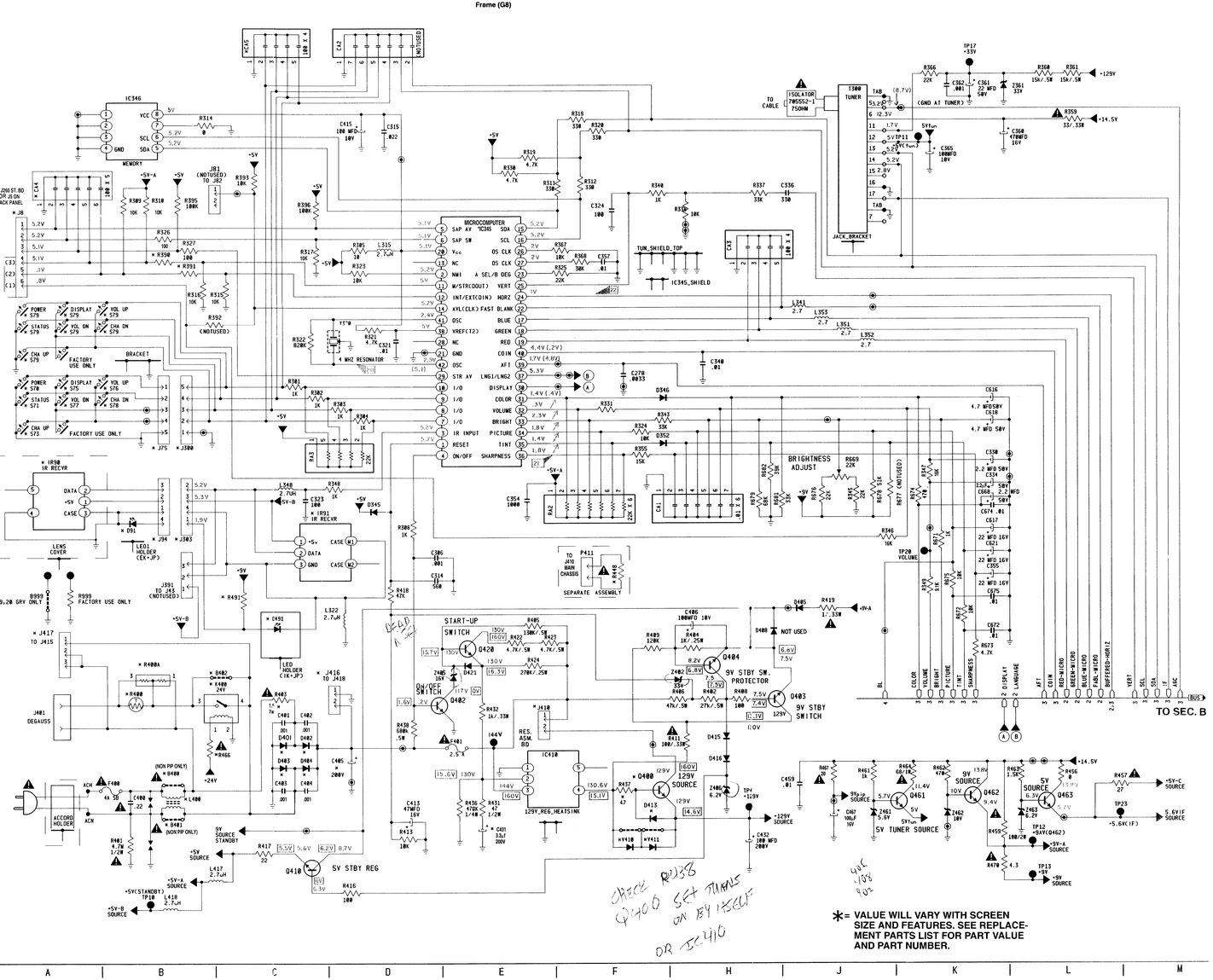
REF. NUMBERS BEGINNING WITH THE LETTER V ARE DESIGNATED AS "VARIABLE PARTS" AND MAY BE RESISTORS, CAPACITORS, ETC. REFER TO THE PARTS LISTS.

MAIN CHASSIS SCHEMATIC NOTES:
UNLESS OTHERWISE SPECIFIED:

1. ALL VOLTAGES AND WAVEFORMS WERE TAKEN UNDER THE CONDITIONS AS FOLLOWS:
   - LINE VOLTAGE MAINTAINED AT 120VAC, VIA AND ISOLATION TRANSFORMER. - STEREO = OFF
   - SOURCE = ANTENNA
   - PICTURE CONTROL = 2.6Vdc AT PIN 35 of IC270
   - BRIGHTNESS CONTROL = 3Vdc AT PIN 37 OF IC270
   - COLOR CONTROL = 2.4Vdc AT PIN 21 OF IC270
   - TINT CONTROL = 2.5Vdc AT PIN 33 OF IC270
   - SHARPNESS CONTROL = 2.6Vdc AT PIN 39 IC270
   - ALL WAVEFORM PHOTOS, VOLTAGES AND SERVICE ADJUSTMENTS WERE PERFORMED ON MODEL RR2535 25" SET.
2. VOLTAGES (WITHOUT PARENTHESIS) WERE TAKEN WITH AN NTSC SIGNAL GENERA"OR DELIVERING 1 Vp-p AT THE ANTENNA TERMINAL.
3. VOLTAGES WITHIN PARENTHESIS WERE TAKEN WITH NO SIGNAL APPLIED; THEY ARE LISTED ONLY WHEN AN APPRECIABLE CHANGE WAS NOTED.
4. VOLTAGES SHOWN WITHIN BOXES WERE TAKEN WITH THE SET IN THE STAND-BY MODE (POWER SUPPLIED TO THE CHASSIS, SET TURNED OFF).
5. ALL VOLTAGES ARE POSITIVE DC WITH RESPECT TO THE GROUND COMMON TO THAT AREA OF CIRCUITRY AND MAY VARY DUE TO NORMAL PRODUCTION TOLERANCES. VOLTAGE SOURCES ARE ALSO NOMINAL.
6. COMPONENT AND SPECIAL SYMBOLS:
   * = INDICATES THESE COMPONENTS ARE SMD "CHIP TYPE" COMPONENTS AND AS SUCH WILL BE LOCATED ON THE BOTTOMSIDE OF THE PRINTED CIRCUIT BOARD.
   x = INDICATES THESE COMPONENTS WILL VARY DEPENDING UPON SCREEN SIZE, PRODUCTION DATES AND OPTIONAL FEATURES INSTALLED. SEE THE REPLACEMENT PARTS LIST FOR SPECIFIC PART INFORMATION.
7. THIS POINT (PIN 51 IC 270) IS SENSITIVE TO THE TOUCH OF A PROBE AND MAY CAUSE MOMENTARY LOSS OF PICTURE.
8. THESE VOLTAGES WILL VARY SUBSTANTIALLY DEPENDING UPON G2 AND CUT-OFF CONTROL SETTINGS (WHICH WILL VARY DEPENDING UPON THE CHARACTERISTICS OF A PARTICULAR PICTURE TUBE). ALSO VOLTAGES WILL VARY DEPENDING UPON CUSTOMER CONTROL SETTINGS (SEE NOTE 1)
9. PIN NUMBERS IN PARENTHESIS ON IC550 REFER TO 7 PIN USED ON 13, 19 & 20" MODELS. 25, 26 & 27" MODELS USE THE 10 PIN IC.
10. THE NUMBERS 1 THRU 28 (WITHIN BOXES) CORRESPOND TO THE WAVEFORM PHOTOS.
11. FOR VOLTAGE, WATTAGE AND TOLERANCE RATINGS OF RESISTORS AND CAPACITORS SEE THE ELECTRICAL REPLACEMENT PARTS LIST.
12. ⚠ INDICATES PCEC REPLACEMENT PART NUMBERS ONLY.
13. ▭▷ = INDICATES SIGNAL FLOW DIRECTION TO AND FROM THE TRUNK LINE.

Y1/Y4 MAIN CHASSIS SCHEMATIC DIAGRAM SECTION A

Frame (G8)



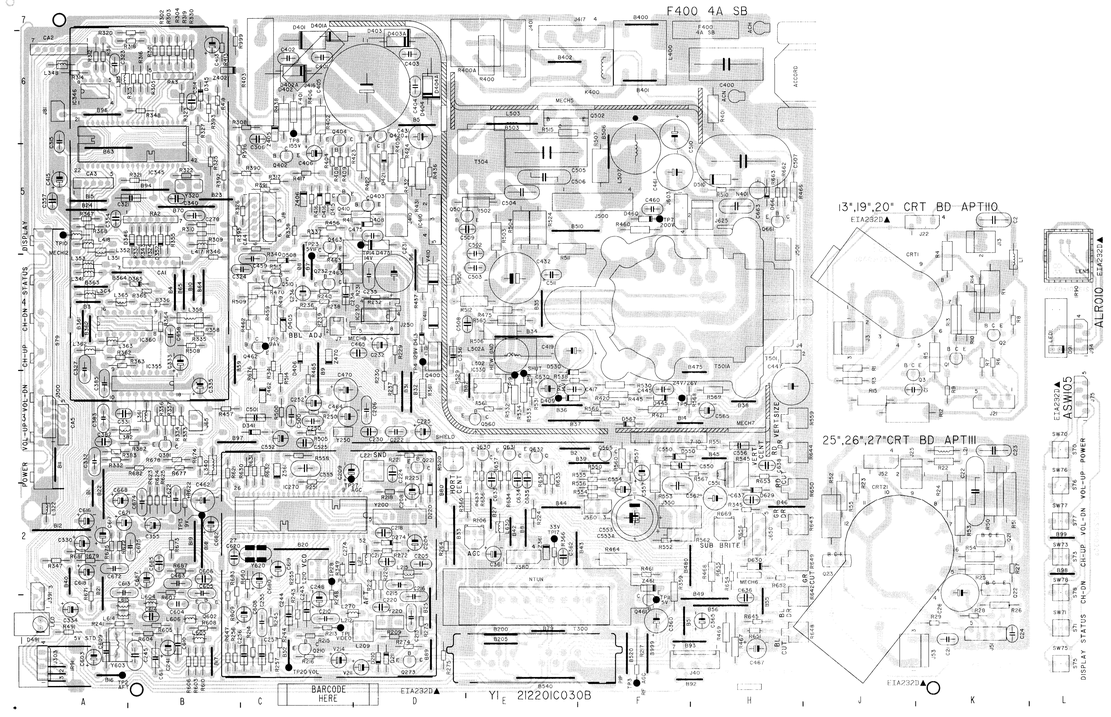
Y1 MAIN CHASSIS P.C. BOARDS (A001 VERSIONS)

Frame (G1)

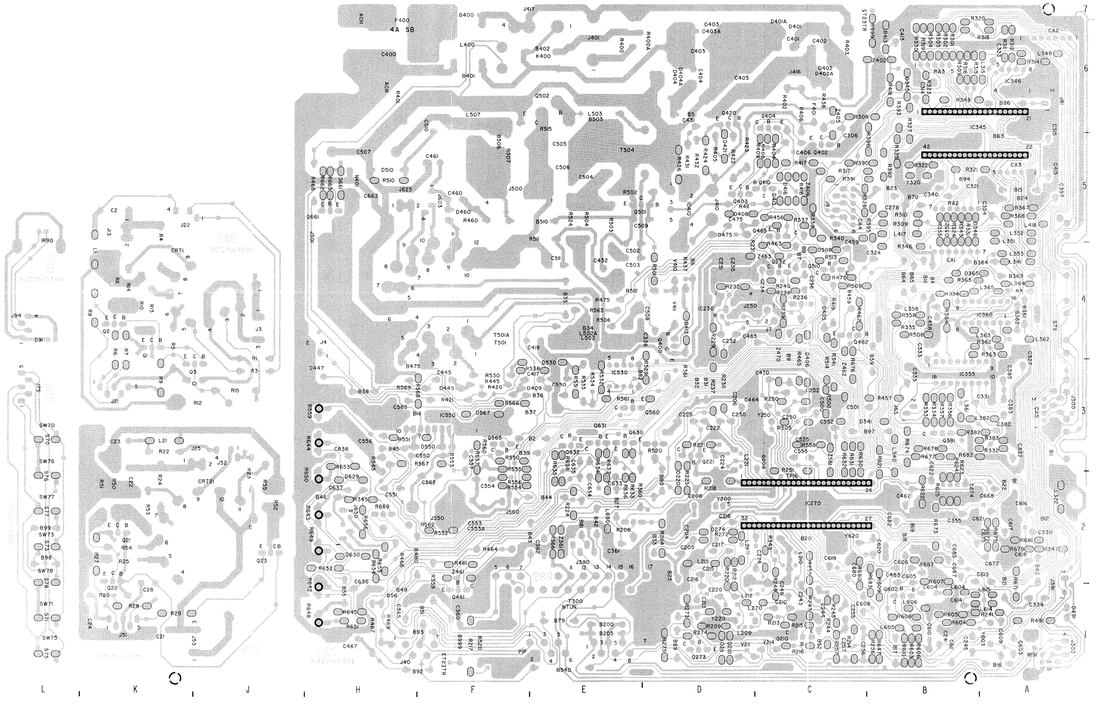
00APT110 & APT111 CRT SOCKET MODULE P.C. BOARD (A001 VERSION)

00ASW105 A001 CUSTOMER SWITCH MODULE P.C. BOARD

00ALR010 A001 REMOTE RECEIVER P.C. BOARD



COMPONENT SIDE



COPPER SIDE

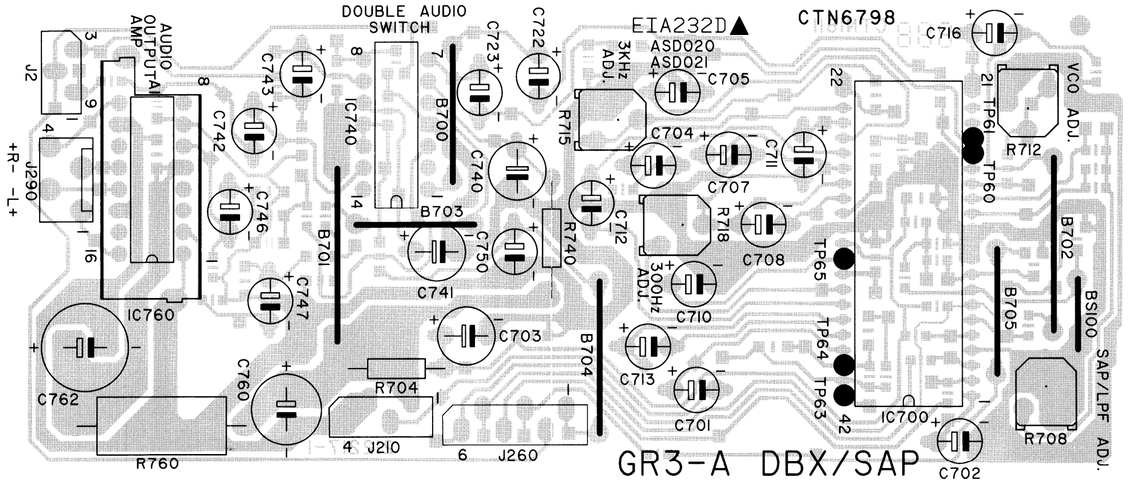
Y1/Y4 TEST POINT TABLE

TP1 - Video	TP12 - 9AV
TP2 - AFT	TP13 - 9V
TP3 - RF AGC	TP14 - 14AV MONO
TP4 - 125V	TP16 - IF (45.75)
TP5 - 24V	TP17 - 33V
TP6 - 14.5V	TP19 - SHUTDOWN GND
TP7 - 200V	TP20 - Volume
TP8 - 155V	TP23 - 5.6V IF
TP9 - SHUTDOWN	TP27 - IF AGC
TP10 - 6V (STANDBY)	TP28 - PLL
TP11 - 5V (TUNER)	

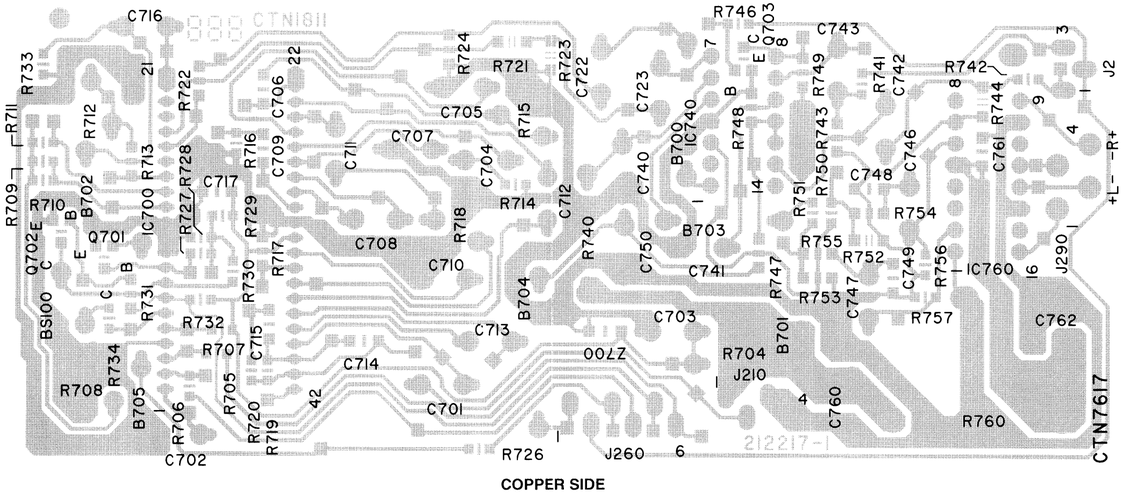
Y1/Y4 PC BD. COMPONENT LOCATION TABLE

COMPONENT	LOCATION	COMPONENT	LOCATION	COMPONENT	LOCATION	COMPONENT	LOCATION	COMPONENT	LOCATION	COMPONENT	LOCATION
D91	L4	D421	D5	Q2	K4	Q510	C4	R644	H3	TP5	F3
D210	D1	D445	F3	Q3	J3	Q530	E3	R650	H2	TP7	F5
D211	D1	D460	F5	Q23	J2	Q560	E3	Z361	E2	TP8	C6
D220	D2	D491	A1	Q221	D3	Q565	F3	Z402	B6	TP9	E3
D341	C3	D508	C4	Q232	C4	Q602	B1	Z405	C6	TP11	F1
D345	B6	D530	E3	Q273	D1	Q630	E3	Z406	C5	TP12	C4
D401	B6	D550	F3	Q381	B3	Q661	H5	Z461	F2	TP14	D4
D401A	C6	D567	F3	Q400	D3	Q631	E3	Z462	C3	TP17	E2
D402	C6	D661	H5	Q402	C5	Q632	E3	Z463	C4	TP223	C4
D402A	C6	IC230	D4	Q404	C5	Q691	E5	Z470	C3	TP27	C2
D403	D6	IC346	A6	Q410	C5	R206	E2	Z529	D3	TP28	C2
D404A	D6	IC355	A3	Q420	D5	R238	C4	Z530	E3	TP61	E3
D408	D5	IC360	A4	Q461	F1	R520	D3	Z561	C3		
D409	F3	IC410	D5	Q462	C4	R559	H3	TP1	C1		
D415	C5	IC560	F3	Q463	C4	R642	H1	TP3	F1		
D416	C5	Q1	K4	Q502	E6	R643	H2	TP4	D4		

00ASD020 & ASD021 (A001 VERSION)
STEREO AMPLIFIER MODULE P.C. BOARDS
Frame D6



COMPONENT SIDE



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WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line * (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

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* Broken Line: ▬ - ▬ - ▬ - ▬ - ▬ - ▬ - ▬

00ASD020, ASD021 A001 DBX STEREO/SAP MODULE REPLACEMENT PARTS LIST

Ref.	Description	Part Number
ASD020 A001	Stereo/SAP Module	4835 219 57419
ASD021 A001	Stereo/SAP Module	4835 219 57448
CAPACITORS		
C701	2.2uF., 50V, Electrolytic	4835 124 47049
C702	2.2uF., 50V, Electrolytic	4835 124 47049
C703	100uF., 16V, Electrolytic	4835 124 47106
C704	1uF., 50V, Electrolytic	4835 124 47045
C706	.047uF., 10%, 50V, Ceramic	• 4835 122 87071
C705	3.3uF., 50V, Electrolytic	4835 124 47096
C707	10uF., 50V, Electrolytic	4835 124 47095
C708	4.7uF., 50V, Electrolytic	4835 124 47072
C709	2700uF., 10%, 50V, Ceramic	• 4835 122 87098
C710	47uF., 25V, Electrolytic	4835 124 47054
C711	1uF., 50V, Electrolytic	4835 124 47045
C712	4.7uF., 50V, Electrolytic	4835 124 47072
C713	.47uF., 50V, Electrolytic	4835 124 47461
C714	.0056uF., 10%, 50V, Ceramic	• 4835 122 87043
C715	.012uF., 10%, 50V, Ceramic	• 4835 122 87082
C716	4.7uF., 50V, Electrolytic	4835 124 47514
C717	.1uF., 10%, 50V, Ceramic	• 4835 122 87061
C722	1uF., 50V, Electrolytic	4835 124 47045
C723	1uF., 50V, Electrolytic	4835 124 47045
C740	100uF., 16V, Electrolytic	4835 124 47116
C741	100uF., 16V, Electrolytic	4835 124 47116
C742	1uF., 50V, Electrolytic (ASD020 ONLY)	4835 124 47045
C743	1uF., 50V, Electrolytic (ASD020 ONLY)	4835 124 47045
C746	1uF., 50V, Electrolytic	4835 124 47045
C747	1uF., 50V, Electrolytic	4835 124 47045
C748	2200pF., 10%, 50V, Ceramic	• 4835 122 87083
C749	2200pF., 10%, 50V, Ceramic	• 4835 122 87083
C750	2.2uF., 50V, Electrolytic	4835 124 47049
C760	220uF., 16V, Electrolytic	4835 124 47061
C761	.1uF., 10%, 50V, Ceramic	• 4835 122 87061
C762	1000uF., 16V, Electrolytic	4835 124 47005
RESISTORS		
All resistors are 5%, 1/4W, Metal Film unless otherwise specified.		
⚠ R704	75 ohm, 1/2W, Metal Oxide	4835 116 57371
R705	1k, 1/10W	• 4835 111 37002
R706	1k, 1/10W	• 4835 111 37002
R707	100k, 1/10W	• 4835 111 37003
R708	22k, SAP/LPF Adj.	4835 100 97041
R709	750k, 1/10W	• 4835 111 37345
R710	47k, 1/10W	• 4835 111 37016
R711	47k, 1/10W	• 4835 111 37016
R712	47k, VCO Adj.	4835 100 97033
R713	47k	• 4835 111 37038
R714	3.9k, 1/10W	• 4835 111 37254
R715	4.7k, 3KHz Adj.	4835 100 97039
R716	3.3k, 1/10W	• 4835 111 37247

Ref.	Description	Part Number
RESISTORS (continued)		
R717	43k, 2%	• 4835 111 37328
R718	10k, 300Hz. Adj.	4835 100 97032
R719	1 Megohm, 1/10W	• 4835 111 37217
R720	100k, 1/10W	• 4835 111 37003
R721	910 ohm	• 4835 111 37142
R722	910 ohm	• 4835 111 37142
R723	2.4k	• 4835 111 37079
R724	2.4k	• 4835 111 37079
R726	47k, 1/10W	• 4835 111 37016
R727	10k, 1/10W	• 4835 111 37216
R728	560 ohm, 1/10W	• 4835 111 37017
R729	510 ohm, 1/10W	• 4835 111 37263
R730	10k, 1/10W	• 4835 111 37216
R731	100k	• 4835 111 37024
R732	10k, 1/10W	• 4835 111 37216
R733	7.5k, 1/10W	• 4835 111 37378
R734	2.7k, 1/10W	• 4835 111 37243
⚠ R740	10 ohm, 1/3W	• 4835 111 30508
R741	1k, 1/10W (ASD020 ONLY)	• 4835 111 37002
R742	1k, 1/10W (ASD020 ONLY)	• 4835 111 37002
R743	2k (ASD020 ONLY)	• 4835 111 37029
R744	2k (ASD020 ONLY)	• 4835 111 37029
R746	47k, 1/10W (ASD020 ONLY)	• 4835 111 37016
R747	100 ohm	• 4835 111 37021
R748	200k	• 4835 111 37136
R749	4.7k	• 4835 111 37037
R750	10k, 1/10W	• 4835 111 37216
R751	10k, 1/10W	• 4835 111 37216
R752	100k	• 4835 111 37024
R753	100k	• 4835 111 37024
R754	4.7k	• 4835 111 37037
R755	4.7k	• 4835 111 37037
R756	4.7k, 1/10W	• 4835 111 37015
R757	4.7k, 1/10W	• 4835 111 37015
⚠ R760	6.8 ohm, 5%, 3W, Metal Oxide	4835 116 67088
SEMICONDUCTORS		
IC700	Stereo Decoder	4835 209 88002
IC740	Volume Control	4835 209 87982
IC760	Audio Output	4835 209 87808
Q701	Stereo Switch	• 4835 130 47086
Q702	SAP Switch	• 4835 130 47086
Q703	Aux Switch	• 4835 130 47086
Z700	Diode, Zener 9.1V	• 4835 130 37544
THE FOLLOWING PARTS ARE NOT NORMALLY STOCKED		
J2	3 Pin Connector	0018 169 30003
J210	4 Pin Connector	0018 169 30004
J260	6 Pin Connector	0018 169 30006
J290	4 Pin Connector	0018 165 60004
	Heatsink f/audio amp	0073 536 20002

00ASD020 & 00ASD021 STEREO/SAP MODULE SCHEMATIC DIAGRAM

Frame (D1)

INTERCONNECT CHART

Main Chassis Schematic - Pg. 20/Frame (G8)
Jack Panel Schematic - Pg. 35/Frame (J1)

SCHEMATIC NOTES
UNLESS OTHERWISE SPECIFIED:

1. FOR VOLTAGE, WATTAGE OR TOLERANCE RATINGS ON CAPACITORS OR RESISTORS, REFER TO THE ELECTRICAL REPLACEMENT PARTS LIST.
2. CAPACITANCE VALUES OF ONE OR MORE ARE IN PICOFARADS.
3. CAPACITANCE VALUES LESS THAN ONE ARE IN MICROFARADS.
4. RESISTANCE VALUES ARE IN OHMS.
5. • = SURFACE MOUNTED DEVICE (SMD).
6. ⚠ = PCEC REPLACEMENT PART NUMBERS ONLY.

TO CHASSIS J250: +12V, MPX, PWR GND, SIG GND — J210 4P

TO CHASSIS J8: VOL, INT/EXT, STEREO SW, STEREO IND., SAP SW, SAP IND. — J260 6P

STEREO SWITCH Q701 — SAP PROCESSING — MULTIPLEX L-R PROCESSING — MODE DISPLAY — dbx PROCESSING — MATRIX — IC700

(NON-SAP) BS100 — SAP/LPF — VCO ADJ. — 300 Hz ADJ. — 3KHz ADJ.

+12V SOURCE — A1 HEAT SINK — IC760 AUDIO OUTPUT AMPLIFIER — SMALL SIGNAL GROUND — LARGE SIGNAL GROUND

LEFT SPKR — RIGHT SPKR — J290 4P

IC740 DOUBLE AUDIO SWITCH AND DC VOLUME CONTROL

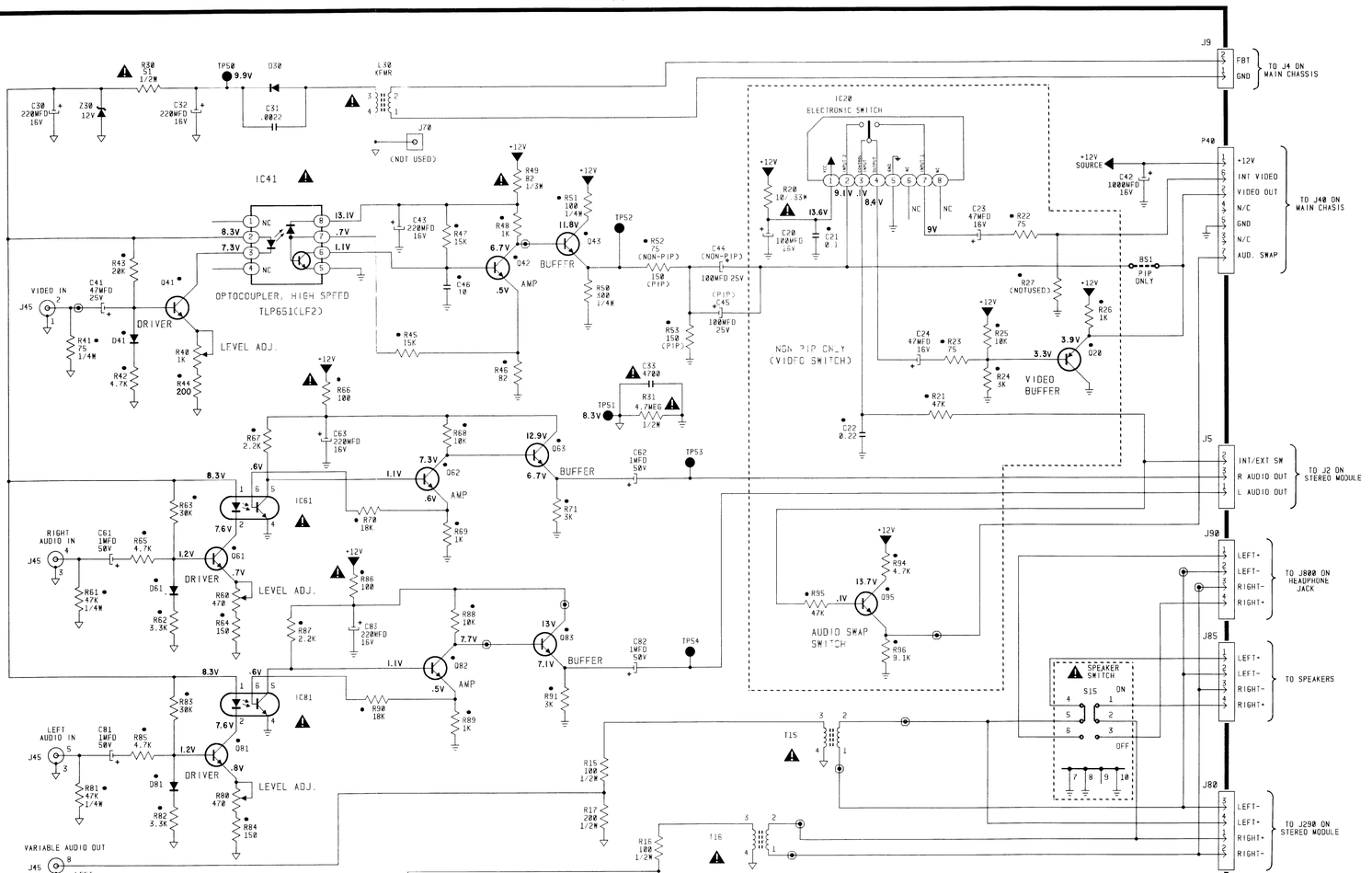
TO JACK PANEL J5 — J2: L. OUT, INT/EXT, R. OUT — JACK MODELS ONLY — AUX SWITCH Q703

INTERCONNECT CHART

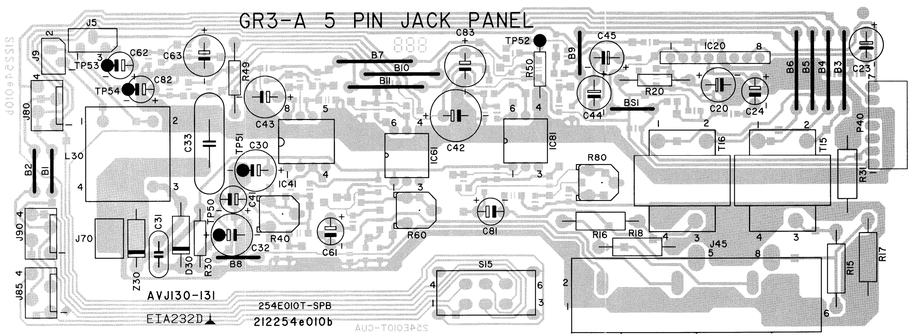
Main Chassis Schematic - Pg. 20/Frame (G8)
Stereo Module Schematic - Pg. 33/Frame (D1)

00AVJ030 & 00AVJ031 AUDIO/VIDEO JACK PANEL SCHEMATIC DIAGRAM

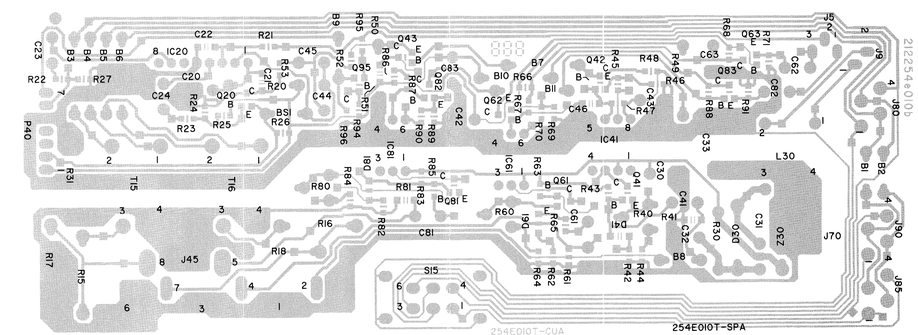
Frame (J8)



00AVJ030 & AVJ031 (A001 VERSION) AUDIO/VIDEO JACK PANEL P.C. BOARDS



COMPONENT SIDE



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AUDIO/VIDEO JACK PANEL MODULE REPLACEMENT PARTS LIST

00AVJ030 A001 VERSIONS (PIP)

Ref.	Description	Part Number
AVJ030 A001	PIP Jack Panel	4835 219 57444
AVJ031 A001	NON PIP Jack Panel	4835 219 57445
CAPACITORS		
C20	100uF., 16V, Electrolytic (AVJ131)	4835 124 47106
C21	1uF., 50V, 10%, Ceramic (AVJ131)	* 4835 122 87061
C22	.22uF., 50V, Carbon Film (AVJ131)	* 4835 122 87087
C23	47uF., 16V, Electrolytic (AVJ131)	4835 124 47449
C24	47uF., 16V, Electrolytic (AVJ131)	4835 124 47073
C30	220uF., 16V, Electrolytic	4835 124 47061
C31	2200pF., 500V, 10%, Ceramic	4835 122 47057
C32	220uF., 16V, Electrolytic	4835 124 47061
⚠ C33	4.7nF., 250VAC, Ceramic Disk	4835 122 97023
C41	47uF., 25V, Electrolytic 20%	4835 124 47054
C42	1000uF., 16V, Electrolytic	4835 124 47005
C43	220uF., 16V, Electrolytic	4835 124 47061
C44	100uF., 25V, Electrolytic (AVJ131)	4835 124 47046
C45	100uF., 25V, Electrolytic (AVJ130)	4835 124 47046
C46	10pF., 50V, Ceramic	* 4835 122 87045
C61	1uF., 50V, Electrolytic	4835 124 47045
C62	1uF., 50V, Electrolytic	4835 124 47045
C63	220uF., 16V, Electrolytic	4835 124 47061
C81	1uF., 50V, Electrolytic 20%	4835 124 47045
C82	1uF., 50V, Electrolytic 20%	4835 124 47045
C83	220uF., 16V, Electrolytic	4835 124 47061
RESISTORS		
R15	100 ohm, 5%, 1/2W, Carbon Film	4835 111 57006
R16	100 ohm, 5%, 1/2W, Carbon Film	4835 111 57006
R17	200R, 5%, 1/2W, Carbon Film	4835 110 47182
R18	200R, 5%, 1/2W, Carbon Film	4835 110 47182
⚠ R20	10 ohm, 5%, 1/3W, Metal Film (AVJ131)	4822 111 30508
R21	47k, 5%, 1/10W, Metal Film (AVJ131)	* 4835 111 37016

Ref.	Description	Part Number
RESISTORS (continued)		
R22	75 ohm, 5%, 1/10W, Metal Film (AVJ131)	* 4835 111 37276
R23	75 ohm, 5%, 1/10W, Metal Film (AVJ131)	* 4835 111 37276
R24	3k ohm, 5%, 1/10W, Metal Film (AVJ131)	* 4835 111 37245
R25	10k, 5%, 1/10W, Metal Film (AVJ131)	* 4835 111 37216
R26	1k, 5%, 1/10W, Metal Film (AVJ131)	* 4835 111 37002
⚠ R30	51 ohm, 5%, 1/2W, Metal Film	4835 116 60086
⚠ R31	4.7 Megohm, 5%, 1/2W, Metal Film	4835 116 57009
R40	1k, Level Control Adj.	4835 100 97031
R41	75 ohm, 5%, 1/4W, Metal Film	* 4835 111 37042
R42	4.7k, 5%, 1/10W, Metal Film	* 4835 111 37015
R43	20k ohm, 5%, 1/10W, Metal Film	* 4835 111 37313
R44	200 ohm, 5%, 1/10W, Metal Film	* 4835 111 37233
R45	15k, 5%, 1/10W, Metal Film	* 4835 111 37006
R46	82 ohm, 5%, 1/10W, Metal Film	* 4835 111 37278
R47	15k, 5%, 1/10W, Metal Film	* 4835 111 37006
R48	1k, 5%, 1/10W, Metal Film	* 4835 111 37002
⚠ R49	82 ohm, 5%, 1/3W, Metal Film	4822 111 30533
R50	300 ohm, 5%, 1/4W, Carbon Film	4835 110 57221
R51	100 ohm, 5%, 1/4W, Metal Film	* 4835 111 37021
R52	150 ohm, 5%, 1/10W, Metal Film (AVJ130)	* 4835 111 37334
R52	75 ohm, 5%, 1/10W, Metal Film (AVJ131)	* 4835 111 37276
R53	150 ohm, 5%, 1/10W, Metal Film (AVJ130)	* 4835 111 37334
R60	470 ohm, level Control Adj.	4835 100 97038
R61	47k, 5%, 1/4W, Metal Film	* 4835 111 37038
R62	3.3k ohm, 5%, 1/10W, Metal Film	* 4835 111 37247
R63	30k, 5%, 1/10W, Metal Film	* 4835 111 37246
R64	150 ohm, 5%, 1/10W, Metal Film	* 4835 111 37334

Ref.	Description	Part Number
RESISTORS (continued)		
R65	4.7k, 5%, 1/10W, Metal Film	* 4835 111 37015
R66	100 ohm, 5%, 1/10W, Metal Film	* 4835 111 37001
R67	2.2k, 5%, 1/10W, Metal Film	* 4835 111 37234
R68	10k, 5%, 1/10W, Metal Film	* 4835 111 37216
R69	1k, 5%, 1/10W, Metal Film	* 4835 111 37002
R70	18k, 5%, 1/10W, Metal Film	* 4835 111 37232
R71	3k ohm, 5%, 1/10W, Metal Film	* 4835 111 37245
R80	470 ohm, Level Control Adj.	4835 100 97038
R81	47k, 5%, 1/4W, Metal Film	* 4835 111 37038
R82	3.3k ohm, 5%, 1/10W, Metal Film	* 4835 111 37247
R83	30k, 5%, 1/10W, Metal Film	* 4835 111 37246
R84	150 ohm, 5%, 1/10W, Metal Film	* 4835 111 37334
R85	4.7k, 5%, 1/10W, Metal Film	* 4835 111 37015
⚠ R86	100 ohm, 5%, 1/10W, Metal Film	* 4835 111 37001
R87	2.2k, 5%, 1/10W, Metal Film	* 4835 111 37234
R88	10k, 5%, 1/10W, Metal Film	* 4835 111 37216
R89	1k, 5%, 1/10W, Metal Film	* 4835 111 37002
R90	18k, 5%, 1/10W, Metal Film	* 4835 111 37232
R91	3k ohm, 5%, 1/10W, Metal Film	* 4835 111 37245
R94	4.7k, 5%, 1/10W, Metal Film (AVJ131)	* 4835 111 37015
R95	47k, 5%, 1/10W, Metal Film (AVJ131)	* 4835 111 37016
R96	9.1k, 5%, 1/10W, Metal Film (AVJ131)	* 4835 111 37279
SEMICONDUCTORS		
D30	Diode, Silicon	4835 130 37052
D41	Diode, Silicon	* 4835 130 37066
D61	Diode, Silicon	* 4835 130 37066
D81	Diode, Silicon	* 4835 130 37066
IC20	Electronic Switch IC (AVJ131)	4835 209 87074
⚠ IC41	Opto Coupler	4835 130 97058
⚠ IC61	Opto Coupler	4835 130 47903
⚠ IC81	Opto Coupler (AVJ130)	4835 130 47903
Q20	Video Buffer (AVJ131)	* 4835 130 47112

Ref.	Description	Part Number
SEMICONDUCTORS (continued)		
Q41	Driver, NPN	* 4835 130 47094
Q42	AMP, NPN	* 4835 130 47094
Q43	Buffer, NPN	* 4835 130 47754
Q61	Driver, NPN	* 4835 130 47094
Q62	AMP, NPN	* 4835 130 47094
Q63	Buffer, NPN	* 4835 130 47094
Q81	Driver, NPN	* 4835 130 47094
Q82	AMP, NPN	* 4835 130 47094
Q83	Buffer, NPN	* 4835 130 47094
Q95	Audio Swap Switch, NPN (AVJ131)	* 4835 130 47094
Z30	Zener, 12V	4835 130 37423
COILS & TRANSFORMER		
⚠ L30	Transformer	4835 148 27047
⚠ T15	Audio Transformer	4835 148 87282
⚠ T16	Audio Transformer	4835 148 87281
MISCELLANEOUS		
⚠ S15	Speaker Switch	4835 276 17241
NOT NORMALLY STOCKED PARTS		
J5	Connector, 3P	0018 169 30000
J9	Connector, 2P	0018 169 30000
J45	Phono JCK	0018 225 80000
J80	Connector, 4 P	0018 165 60000
J85	Connector, 4 P	0018 165 60000
P40	Connector, 7P	0018 220 38000

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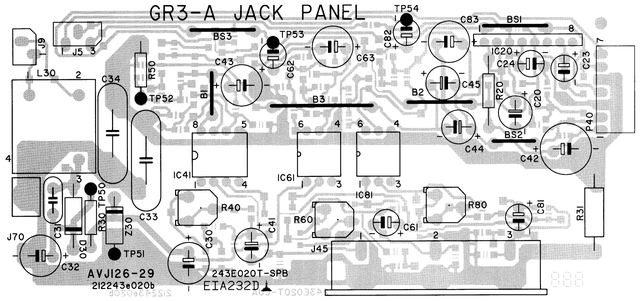
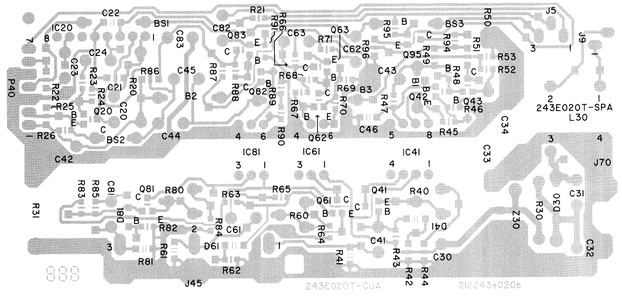
INTERCONNECT CHART

Main Chassis Schematic - Pg. 20/Frame (G8)
Stereo Module Schematic - Pg. 33/Frame (D1

00AVJ126, 00AVJ127, 00AVJ128, 00AVJ129 (A001 VERSION) AUDIO/VIDEO JACK PANEL P.C. BOARDS



COMPONENT SIDE



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AUDIO/VIDEO JACK PANEL REPLACEMENT PARTS LIST

00AVJ126 (A001 MONO/PIP VERSION) 00AVJ127 (A001 MONO/NON PIP VERSION)
00AVJ128 (A001 STEREO/PIP VERSION) 00AVJ129 (A001 STEREO/NON PIP VERSION)

Ref.	Description	Part Number
J26 A001	Mono/PIP Jack Panel	4835 219 57421
J27 A001	Mono/NON PIP Jack Panel	4835 219 57422
J28 A001	Stereo/PIP Jack Panel	4835 219 57432
J29 A001	Stereo/NON PIP Jack Panel	4835 219 57423
PACITORS		
C20	100uF., 16V, Electrolytic (AVJ127 & 129)	4835 124 47106
C21	.1uF., 50V, Ceramic (AVJ127 & 129) *	4835 122 87061
C22	.22uF., 50V, Ceramic (AVJ127 &129) *	4835 122 87087
C23	47uF., 16V, Electrolytic (AVJ127 & 129)	4835 124 47073
C24	47uF., 16V, Electrolytic (AVJ127 & 129)	4835 124 47073
C30	220uF., 16V, Electrolytic	4835 124 47061
C31	2200pF., 10%, 500V, Ceramic	4835 122 47057
C32	220uF., 16V, Electrolytic	4835 124 47061
C33	4700pF., 250V AC, Ceramic	4835 122 97023
C41	47uF., 16V, Electrolytic	4835 124 47449
C42	1000uF., 16V, Electrolytic	4835 124 47005
C43	220uF., 16V, Electrolytic	4835 124 47061
C44	100uF., 25V, Electrolytic (AVJ127 & 129)	4835 124 47046
C45	100uF., 25V, Electrolytic (AVJ126 & 128)	4835 124 47046
C46	10pF., 50V, Ceramic *	4835 122 87045
C61	1uF., 50V, Electrolytic	4835 124 47045
C62	1uF., 50V, Electrolytic	4835 124 47045
C63	220uF., 16V, Electrolytic	4835 124 47061
C81	1uF., 50V, Electrolytic (AVJ128 & 129)	4835 124 47045
C82	1uF., 50V, Electrolytic (AVJ128 & 129)	4835 124 47045
C83	220uF., 16V, Electrolytic (AVJ128 & 129)	4835 124 47061

Ref.	Description	Part Number
RESISTORS		
⚠ R20	10 ohm, 5%, 1/3W, Metal Film (AVJ127 & 129)	4822 111 30508
R21	47k, 5%, 1/10W, Metal Film (AVJ127 & 129) *	4835 111 37016
R22	75 ohm, 5%, 1/4W, Metal Film (AVJ127 & 129) *	4835 111 37042
R23	75 ohm, 5%, 1/10W, Metal Film (AVJ127 & 129) *	4835 111 37276
R24	3k, 5%, 1/10W, Metal Film (AVJ127 & 129) *	4835 111 37245
R25	10k, 5%, 1/4W, Metal Film (AVJ127 & 129) *	4835 111 37023
R26	1k,5%, 1/10W, Metal Film (AVJ127 & 129) *	4835 111 37002
R30	51 ohm, 5%, 1/2W, Metal Oxide	4835 116 67086
⚠ R31	4.7Meg., 5%, 1/2W, Metal Film	4835 116 57009
R40	1k, Level Adj.	4835 100 97031
R41	75 ohm, 5%, 1/4W, Metal Film *	4835 111 37042
R42	4.7k, 5%, 1/4W, Metal Film *	4835 111 37037
R43	20k, 5%, 1/10W, Metal Film *	4835 111 37313
R44	200 ohm, 5%, 1/4W, Metal Film *	4835 111 37068
R45	15K, 5%, 1/10W, Metal Film *	4835 111 37006
R46	82 ohm, 5%, 1/10W, Metal Film *	4835 111 37278
R47	15k, 5%, 1/10W, Metal Film *	4835 111 37006
R48	1k, 5%, 1/10W, Metal Film *	4835 111 37002
⚠ R49	82 ohm, 5%, 1/4W, Metal Film	4835 111 37126
R50	300 ohm, 5%, 1/4W, Carbon Film	4835 110 57221
R51	100 ohm, 5%, 1/4W, Metal Film *	4835 111 37021
R52	75 ohm, 5%, 1/10W, Metal Film (AVJ127 & 129) *	4835 111 37276
R52	150 ohm, 5%, 1/10W, Metal Film (AVJ126 & 128) *	4835 111 37334
R53	150 ohm, 5%, 1/10W, Metal Film (AVJ126 & 128) *	4835 111 37334
R60	470 ohm, Level Adj.	4835 100 97038

Ref.	Description	Part Number
RESISTORS (continued)		
R61	47k, 5%, 1/4W, Metal Film *	4835 111 37038
R62	3.3k, 5%, 1/10W, Metal Film *	4835 111 37247
R63	30k,5%, 1/10W, Metal Film *	4835 111 37246
R64	150 ohm, 5%, 1/10W, Metal Film *	4835 111 37334
R65	4.7k, 5%, 1/10W, Metal Film *	4835 111 37015
⚠ R66	100 ohm, 5%, 1/10W, Metal Film *	4835 111 37001
R67	2.2k, 5%, 1/10W, Metal Film *	4835 111 37234
R68	10k, 5%, 1/10W, Metal Film *	4835 111 37216
R69	1k, 5%, 1/10W, Metal Film *	4835 111 37002
R70	18k, 5%, 1/10W, Metal Film *	4835 111 37232
R71	3k, 5%, 1/10W, Metal Film *	4835 111 37245
R80	470 ohm, Level Adj. (AVJ128 & 129)	4835 100 97038
R81	47k, 5%, 1/4W, Metal Film (AVJ128 & 129) *	4835 111 37038
R82	3.3k, 5%, 1/10W, Metal Film (AVJ128 & 129) *	4835 111 37247
R83	30k, 5%, 1/10W, Metal Film (AVJ128 & 129) *	4835 111 37246
R84	150 ohm, 5%, 1/10W, Metal Film (AVJ128 & 129) *	4835 111 37334
R85	4.7k, 5%, 1/10W, Metal Film (AVJ128 & 129) *	4835 111 37015
⚠ R86	100 ohm, 5%, 1/4W, Metal Film (AVJ128 & 129) *	4835 111 37021
R87	2.2k, 5%, 1/10W, Metal Film (AVJ128 & 129) *	4835 111 37234
R88	10k, 5%, 1/10W, Metal Film (AVJ128 & 129) *	4835 111 37216
R89	1k, 5%, 1/10W, Metal Film (AVJ128 & 129) *	4835 111 37002
R90	18k, 5%, 1/10W, Metal Film (AVJ128 & 129) *	4835 111 37232
R91	3k, 5%, 1/10W, Metal Film (AVJ128 & 129) *	4835 111 37245
R94	4.7k, 5%, 1/10W, Metal Film (AVJ127 & 129) *	4835 111 37015

Ref.	Description	Part Number
RESISTORS (continued)		
R95	47k, 5%, 1/10W, Metal Film (AVJ127 & 129) *	4835 111 37016
R96	9.1k, 5%, 1/4W, Metal Film (AVJ127 & 129) *	4835 111 37127
SEMICONDUCTORS		
IC20	Electronic Switch	4835 209 87074
⚠ IC41	Opto Coupler	4835 130 97058
⚠ IC61	Opto Coupler	4835 130 47903
⚠ IC81	Opto Coupler (AVJ128 & 129)	4835 130 47903
Q20	Video Buffer, PNP	* 4835 130 47112
Q41	Driver, NPN	* 4835 130 47094
Q42	Amp, NPN	* 4835 130 47094
Q43	Buffer, NPN	* 4835 130 47751
Q61	Driver, NPN	* 4835 130 47094
Q62	Amp, NPN	* 4835 130 47094
Q63	Buffer, NPN	* 4835 130 47094
Q81	Driver, NPN (AVJ128 & 129)	* 4835 130 47094
Q82	Amp, NPN (AVJ128 & 129)	* 4835 130 47094
Q83	Buffer, NPN (AVJ128 & 129)	* 4835 130 47094
Q95	Audio Swap Sw., NPN	* 4835 130 47094
D30	Diode	* 4835 130 37052
D41	Diode	* 4835 130 37066
D61	Diode	* 4835 130 37066
D81	Diode	* 4835 130 37066
Z30	Zener, 12V	4835 130 37423
MISCELLANEOUS		
⚠ L30	Trigniformer	4835 148 27042

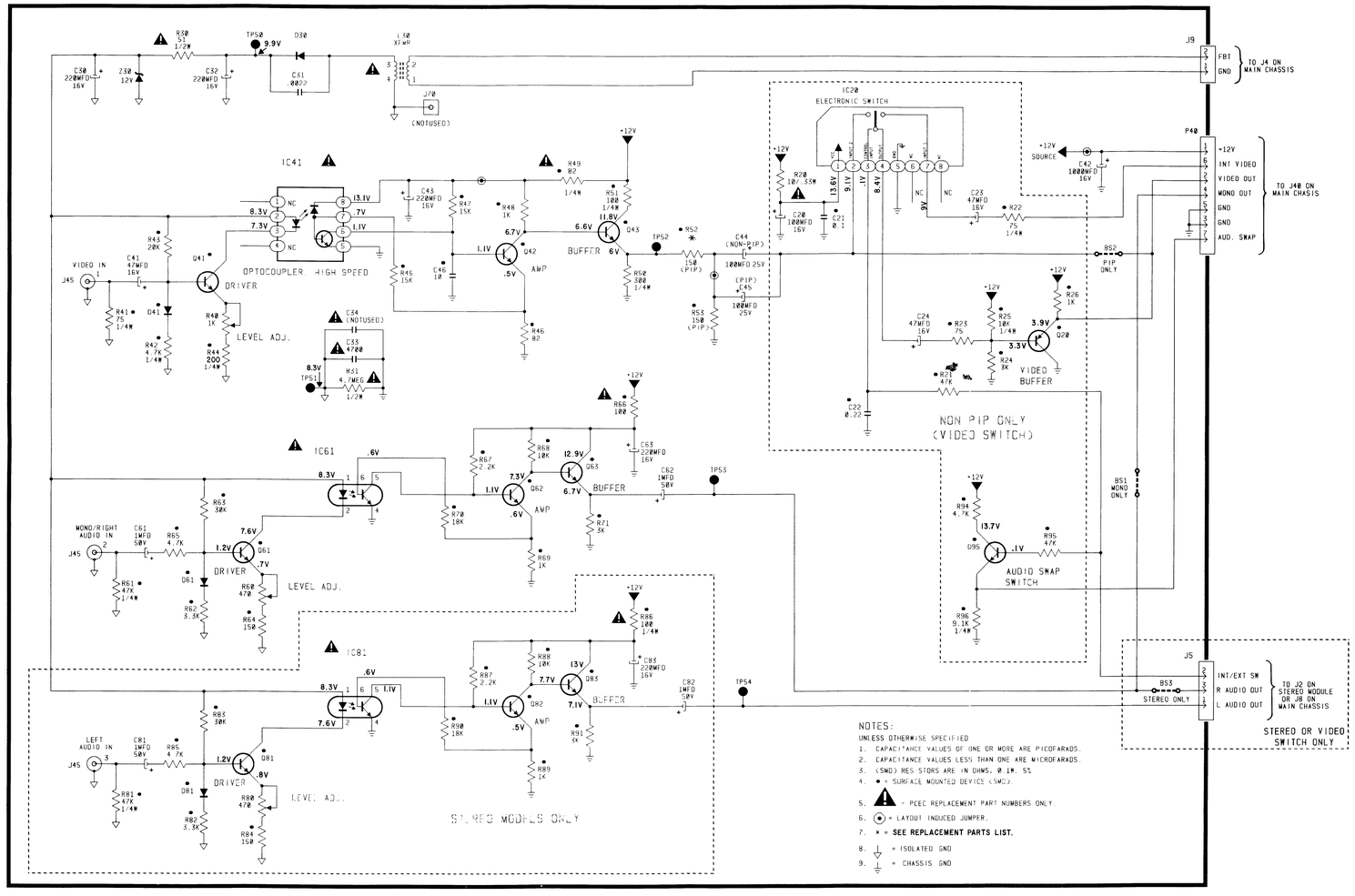
THE FOLLOWING PARTS ARE NOT NORMALLY STOCKED.

J5	3 Pin Connector	0018 169 30003
J9	2 Pin Connector	0018 169 30002
P40	7 Pin Connector	0018 229 38007
J45	Phono Asm. (AVJ126 & AVJ127)	0018 220 40420
J45	Phono Asm. (AVJ128 & AVJ129)	0018 220 40423

To order parts call the TOLL FREE Philips Sales Center number : 1-800-851-8885

00AVJ126, 00AVJ127, 00AVJ128, 00AVJ129 AUDIO/VIDEO JACK PANEL MODULE SCHEMATIC DIAGRAM

Frame (J1)



NOTES:
UNLESS OTHERWISE SPECIFIED
1. CAPACITANCE VALUES OF ONE OR MORE ARE PICOFARADS.
2. CAPACITANCE VALUES LESS THAN ONE ARE MICROFARADS.
3. (SMD) RES STORS ARE IN OHMS, ¼ W, 5%
4. ● = SURFACE MOUNTED DEVICE (SMD).
5. ⚠ = PCEC REPLACEMENT PART NUMBERS ONLY.
6. ◉ = LAYOUT INDUCED JUMPER.
7. * = SEE REPLACEMENT PARTS LIST.
8. ⏚ = ISOLATED GND
9. ⏚ = CHASSIS GND